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# Oregon

John A. Kitzhaber, M.D., Governor

Department of Environmental Quality

Northwest Region  
2020 SW Fourth Avenue  
Suite 400  
Portland, OR 97201-4987  
(503) 229-5243 Voice  
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January 4, 1999

REC'D GATX

JAN 13 1999

WILLBRIDGE TERM.

GATX TERMINALS CORP  
GATX TANK STORAGE TERMINALS CORP  
11400 NW ST HELENS RD  
PORTLAND OR 97231

DEPT OF ENVIRONMENTAL QUALITY  
RECEIVED

JAN 07 1999

NORTHWEST REGION

RE: ISSUANCE OF OREGON TITLE V  
OPERATING PERMIT # 26-2028

The Department of Environmental Quality has completed processing your Oregon Title V Operating Permit application and has issued the enclosed permit. Also enclosed are the reporting and modification forms for Title V sources. Please use these forms for all reports submitted to the Department and all requests for permit modifications.

The permit became effective when signed by the Regional Air Quality Manager. If you wish to appeal any of the conditions or limitations contained in the attached permit or if you have any questions, please contact George Yun at (503) 229-6093. If issues related to the permit conditions cannot be resolved to your satisfaction, you may request a hearing before the Environmental Quality Commission or its authorized representative. Any such requests shall be made in writing within 20 days of the date of this letter, and shall clearly specify which permit conditions are being challenged and why, including each alleged factual or legal objection. Permit conditions that are not contested shall be in effect upon the date the permit was signed (OAR 340-28-2300). Once effective, the Title V Operating Permit will replace your existing Air Contaminant Discharge Permit.

You are urged to carefully read the permit and take all possible steps to ensure compliance with the conditions established.

Sincerely,

Ed Druback  
Air Quality Manager  
Northwest Region

Enclosure

Cc: DEQ, Air Quality Division  
George Yun/NWR  
EPA Region X



DEPT OF ENVIRONMENTAL QUALITY  
RECEIVED

Permit Number: 26-2028  
Expiration Date: 01/01/2004  
Page 1 of 49 Pages

JAN 07 1999

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY  
OREGON TITLE V OPERATING PERMIT

NORTHWEST REGION

Northwest Region  
2020 SW 4th, Suite 400  
Portland, OR 97201  
Telephone: (503) 229-5263

Issued in accordance with the provisions of  
ORS 468A.040 and based on the land use compatibility findings included in the permit record.

ISSUED TO:

GATX Terminals Corporation/  
GATX Tank Storage Terminals Corporation  
11400 NW St. Helens Road  
Portland, OR 97231

INFORMATION RELIED UPON:

Application Number: 015006  
Received: 05/15/95  
WSPA letter dated: 08/11/97

PLANT SITE LOCATION:

Linnton Terminal:  
11400 NW St. Helens Road  
Portland, OR 97231

LAND USE COMPATIBILITY STATEMENT:

From: City of Portland  
Dated: 04/19/95

Willbridge Terminal:  
5880 NW St. Helens Road  
Portland, OR 97210

ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY

  
Ed Druback, NWR AQ Manager

1/4/99  
Date

Nature of Business:

Primary SIC: 5171 Bulk Gasoline Terminal  
Other SIC: 4226 Special warehousing and storage facilities for hire

RESPONSIBLE OFFICIAL:

Name: Mr. Ross Oates  
Title: Terminal Superintendent

FACILITY CONTACT PERSON:

Name: Mr. Ross Oates  
Title: Terminal Superintendent  
Phone: (503) 220-1254

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**LIST OF ABBREVIATIONS USED IN THIS PERMIT**

ACDP	Air Contaminant Discharge Permit
acfm	actual cubic foot per minute
API	American Petroleum Institute
AQMA	Air quality management area
ASTM	American Society of Testing and Materials
bbl	barrel
Btu	British thermal unit
CFR	Code of federal regulations
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
DEQ/ODEQ	Oregon Department of Environmental Quality
dscf	dry standard cubic foot
EF	emission factor
EPA	US Environmental Protection Agency
EU	Emissions unit
FBR	Free board ratio
FCAA	Federal Clean Air Act
ft <sup>3</sup>	cubic feet
gr/dscf	grain per dry standard cubic foot
HAP	Hazardous Air Pollutant as defined by OAR 340-032-0130
HCFC	Hydro-chloro-fluoro-carbons
ID	Identification number
I&M	Inspection and maintenance
LPG	Liquefied petroleum gas
MB	Material balance
mg/l	milligrams per liter
MMBtu	Million British thermal units
mvac	Motor vehicle air conditioner
NG	Natural gas
NO <sub>x</sub>	Oxides of nitrogen
O <sub>2</sub>	Oxygen
OAR	Oregon Administrative Rules
ORS	Oregon Revised Statutes
O&M	Operation and maintenance
Pb	Lead
PCD	Pollution control device
PM	Particulate matter
PM <sub>10</sub>	Particulate matter less than 10 microns in size
ppm	Part per million
ppmv	Part per million by volume
PSEL	Plant Site Emission Limit
psig	pounds per square inch, gauge pressure
RACT	Reasonably Available Control Technology
RVP	Reid Vapor Pressure
scf	Standard cubic foot
SERP	Source Emission Reduction Plan
SIP	State Implementation Plan
SNAP	Significant New Alternative Policy
SO <sub>2</sub>	Sulfur dioxide
ST	Source test
VE	Visible emissions
VMT	Vehicle miles traveled
VOC	Volatile organic compound
VOL	Volatile organic liquid
WSPA	Western State Petroleum Association

### PERMITTED ACTIVITIES

1. Until such time as this permit expires or is modified or revoked, the permittee is allowed to discharge air contaminants from those processes and activities directly related to or associated with air contaminant source(s) in accordance with the requirements, limitations, and conditions of this permit. [OAR 340-028-2100, 340-028-2200(2)]
2. All conditions in this permit are federally enforceable and state enforceable except conditions 10, 11, 20, and 27 are enforceable by the state only. [OAR 340-028-2140 and 340-028-2150]

### EMISSIONS UNIT (EU) AND POLLUTION CONTROL DEVICE (PCD) IDENTIFICATION

3. The emissions units and pollution control devices regulated by this permit are the following [OAR 340-028-2120(3)]:

3.a. Fixed Roof Tanks (FIXTANK) regulated by this permit are the following:

FIXTANK Description	FIXTANK Device ID	Rated Capacity (gallons)	Year Installed
All fixed roof tanks at the <u>Linnton</u> Terminal	L305, L306, L309, L310, L312, L313, L314, L315, L326, L330, L331, L532.	< 39,000	Pre-1926, except L532 installed in 1965
	L1033, L2024, L2502, L2503, L3034, L5004, L5025, L10007.	39,000 - 420,000	1910 - 1937
	L20011	856,506	1932
	L30016	1,253,784	1941
	L55008	2,288,832	1933
	L55021	2,324,490	1918
	L55023	2,312,016	1944
All fixed roof tanks at the <u>Willbridge</u> Terminal.	W9, W10, W11, W12, W13, W14, W15, W16, W17, W18, W22, W23, W25, W30, W31, W32, W33, W34, W35, W37, W38, W39, W40, W41, W42, W43, W44, W45, W46, W47, W48, W49, W50, W51, W56, W57, W58, W59, W60, W62, W63, W75, W76, W77, W82, W83, W93, W95, W96, W97, W98, W99, W109, W110, W111, W112, W113, W114, W115, W125, W126, W127, W129, W130, W131,	< 39,000	Pre-1960

FIXTANK Description	FIXTANK Device ID	Rated Capacity (gallons)	Year Installed
All fixed roof tanks at the <u>Willbridge</u> Terminal.	W132, W145, W146, W147, W148, W150, W151, W153, W154, W155, W156, W157, W158, W159, W160, W161, W162, W163, W169, W170, W171, W172, W176, W177, W186, W187, W188, W189.	< 39,000	Pre-1960
	W135, W136, W193, W194.		date unknown
All fixed roof tanks at the <u>Willbridge</u> Terminal.	W4, W6, W8, W74, W86, W87, W88, W89, W91, W92, W94, W102, W103, W104, W106, W137, W143, W173.	39,000 - 420,000	Pre-1960 except W173 installed in 1972.
	W2	3,095,400	1915
	W3	537,600	Pre-1960
	W5	424,200	Pre-1960
	W7	424,200	Pre-1960
	W52	3,154,200	1923
	W54	3,351,600	1924
	W64	840,000	Pre-1960
	W69	3,166,800	1937
	W70	1,411,200	1938
	W71	831,600	Pre-1960
	W73	529,200	Pre-1960
	W85	2,255,400	Pre-1960
	W100	3,171,000	1949
	W84	2,137,800	Pre-1960
	W101	3,255,000	1949
	W116	3,129,000	1951
	W117	516,600	1951
	W118	2,079,000	1951
	W123	3,011,400	1952

FIXTANK Description	FIXTANK Device ID	Rated Capacity (gallons)	Year Installed
All fixed roof tanks at the <u>Willbridge</u> Terminal.	W124	3,171,000	1952
	W128	2,310,000	1953
	W134	2,142,000	1955
	W138	554,400	Pre-1960
	W139	554,200	Pre-1960
	W140	604,800	1956
	W141	709,800	1956

3.b. External Floating Roof Tanks (EXTANK) regulated by this permit are the following:

EXTANK Description	EXTANK Device ID	Rated Capacity (gal)	Year Installed
All external floating roof tanks at the <u>Linnton</u> Terminal.	L45028	1,889,538	1955
	L59029	2,454,060	1955
All external floating roof tanks at the <u>Willbridge</u> Terminal.	None	---	---

3.c. Internal Floating Roof Tanks (INTANK) regulated by this permit are the following:

INTANK Description	INTANK Device ID	Rated Capacity (gal)	Year Installed
All internal floating roof tanks at the <u>Linnton</u> Terminal.	L55022	2,309,286	Pre-1941
	L11019	469,896	1941
	L17027	739,074	1954
	L11017	469,938	1941
	L2501		
	L17018		
	L17020		
	W105	163,800	1951
	W152	478,800	1964

INTANK Description	INTANK Device ID	Rated Capacity (gal)	Year Installed
Future internal floating roof storage tanks.  (Fixed roof storage tanks that are planned to be retrofitted with an internal floating roof.)	W84, W85, W100, W101, W102, W106, W116, W117, W118, W123, W124, W128, W134, W137, W138, W139, W140, W141, W143	Refer to item 3.a for Installation & Capacity Information.	Future Modification <sup>***</sup> allowed per condition 4.

3.d. Marine/Barge Loading Operations (MLOAD) regulated by this permit are the following:

MLOAD Description	MLOAD ID	PCD	PCD ID
All marine/barge loading operations conducted at the <u>Linnton</u> Terminal	L-MLOAD	None	--
All marine/barge loading operations conducted at the <u>Willbridge</u> Terminal	W-MLOAD	Vapor Recovery Unit	W-VRU

3.e. Tanker Truck/Trailer Loading Racks (TRACK) regulated by this permit are the following:

TRACK Description	TRACK ID	PCD	PCD ID
Tanker truck and trailer loading racks at the <u>Linnton</u> Terminal	L-TRACK	Vapor recovery unit (VRU) at the Linnton Terminal	L-VRU
Tanker truck and trailer loading racks at the <u>Willbridge</u> Terminal	W-TRACK	The new Carbon adsorption/absorption VRU that replaced (old) lean oil VRU <sub>oil</sub>	W-VRU
		Lean oil vapor recovery unit VRU <sub>oil</sub> used as back-up during maintenance of W-VRU	W-VRU <sub>oil</sub>

<sup>\*\*\*</sup> The installation of internal floating roof will yield a reduction in VOC emissions. These future projects will not result in an increase in either potential or actual emissions. Furthermore, the cost of the installation of internal floating roofs will be less than 50% of the cost of building new internal floating roof storage tanks. Therefore, these future projects do not meet the definition of modification or reconstruction cited in 40 CFR 60.14 & 60.15.



3.f. Fugitive VOC emission sources (FGTVOC) regulated by this permit are the following:

FGTVOC Description	FGTVOC Device ID
VOC emissions from Flanges, valves, pumps, etc. at the <u>Linnton</u> Terminal	L-FGTVOC
VOC emissions from Flanges, valves, pumps, etc. at the <u>Willbridge</u> Terminal	W-FGTVOC

3.g. Fuel Combustion sources (BOILER) regulated by this permit are the following:

BOILER Description	BOILER Device ID
Two boilers (16.5 Mbtu/hr each) at the <u>Linnton</u> Terminal.	L- Boiler1 L-Boiler2
Two boilers (55.6 Mbtu/hr, 78.2 Mbtu/hr) at the <u>Willbridge</u> Terminal.	W-Boiler1 W-Boiler2

4. The permittee is allowed to install and/or modify the emissions units and pollution control devices identified below: [OAR 340-028-2120(3)]

EU/PCD ID.	Description of Modification/Construction
W84, W85, W100, W101, W102, W106, W116, W117, W118, W123, W124, W128, W134, W137, W138, W139, W140, W141, & W143.	Fixed Roof Storage tank will be retrofitted with an internal floating roof.

- 4.a. The permittee shall notify the Department within 30 days of completion of modification or construction of each device.
- 4.b. The notice shall include the date of completion of modification or construction, and the date the device was or will be put into operation.
- 4.c. The Notice of completion form submitted pursuant to OAR 340-028-0820(6) satisfies the notification requirements of this condition, and no additional report is necessary.

### **EMISSION LIMITS AND STANDARDS**

The following Table-I through Table-III contain summaries of applicable requirements other than the Plant Site Emission Limits (PSEL), along with the monitoring methods for the emissions units to which those requirements apply.

**Table-I. Facility-wide Emission Limits and Standards**

Applicable Requirements		Pollutant/ Parameter	Limit/ Standard	Monitoring Requirements	
Oregon Administrative Rule / 40 CFR	Condition Number			Method	Condition Number
340-022-0010	5	Residual fuel oil sulfur content	1.75% by weight	%S Analysis / Recordkeeping	30
340-022-0015	6	Distillate fuel oil sulfur content	0.3% by weight 0.5% by weight		
340-022-0300	7	VOC	RVP Standards	Testing and Recordkeeping	31
340-022-0460 through 340-022-0650	8	CO <sub>x</sub>	Oxygenated Fuel Standards	Recordkeeping	32
340-027-0015	9	Ozone	SERP	Recordkeeping	33
340-030-0460	10	VOC	Equipment Specification	I&M Recordkeeping	34
340-030-0540	11	Odor	no nuisance	I&M Recordkeeping	35

5. The permittee shall not sell, distribute, use, or make available for use, any residual fuel oil containing more than 1.75 percent sulfur by weight. [OAR 340-022-0010]
6. The permittee shall not sell, distribute, use, or make available for use the following distillate fuel oils: [OAR 340-022-0015]
  - 6.a. ASTM Grade-1 distillate fuel oil containing more than 0.3 percent sulfur by weight; and
  - 6.b. ASTM Grade-2 distillate fuel oil containing more than 0.5 percent sulfur by weight.
7. During the control period specified (May 15 through September 15), the permittee shall comply with the applicable RVP standards of gasoline and gasohol distributed in the control area, and other associated requirements established in OAR 340-022-0300. This condition does not provide a shield for the federal RVP standards specified at 40 CFR 80.27(2).
8. During the control period specified (November 1 through February 29), the permittee shall comply with the applicable oxygenated fuel specifications and other associated requirements established in OAR 340-022-0460 through 340-022-0650.
9. In the event an Air Pollution Alert, Warning, or Emergency Episode for ozone is declared in the Portland area by the Department, the permittee shall take the action appropriate to the episode condition as described below. The permittee shall take such action when the permittee first becomes aware of such a declaration whether through news media, direct contact with the Department, or from other sources. [OAR 340-027-0015]

- 9.a. **ALERT:** Notify the employees and prepare to take possible further action in case the episode escalates into a warning or an emergency stage. Employees may voluntarily reduce operations of personal motor vehicle.
- 9.b. **WARNING:** Maintain required action of Alert conditions. Ensure proper operation of Vapor Recovery Units during tank truck loading operations.
- 9.c. **EMERGENCY:** Maintain required action of Warning condition. Cease all marine loading operations (MLOAD) of gasoline, unless control strategies are utilized to reduce VOC emissions from MLOAD by at least 90%.
10. Gasoline storage tanks with a capacity of 500 gallons or more, installed after January 1, 1970, shall be equipped with submersible filling device or other vapor emission control systems. [OAR 340-030-0460(3)] [State-only enforceable]
11. The permittee shall not allow the emission of odorous matter so as to create nuisance conditions off the permittee's property. [OAR 340-030-0540] [State-only enforceable]

**Table-II. Emissions Unit Specific Emission Limits and Standards**

EU/PCD ID	Applicable Requirements		Pollutant/ Parameter	Limit/ Standard	Monitoring Requirements	
	OAR / 40 CFR	Cond No.			Method	Cond No.
BOILER	340-021-015(2) & 340-021-0015(3)(a)	12	visible emissions	20% opacity	VE periodic monitoring	36
	340-021-0020(1)(a)	13	PM/PM <sub>10</sub>	0.2 gr/dscf	VE/ST periodic monitoring	36
L-TRACK/VRU & W-VRU <sub>oil</sub>	340-022-0130 & 340-022-0137	14	VOC	80 mg/l, O&M, Equipment spec.	Testing, I&M Recordkeeping	37
W-TRACK/VRU	340-022-0130/0137 & 40 CFR, Part 60, subpart XX	15 (& 14)	VOC	35 mg/l, O&M, Equipment spec.	Testing, I&M Recordkeeping	38 (& 37)
EXTANK	340-022-0160	16	VOC	Equipment spec.	Measurements I&M Recordkeeping	39
INTANK (All)	340-022-0160	17	VOC	Equipment spec.	Measurements I&M Recordkeeping	40
FIXTANK	340-022-0160(1)	18	VOC	O&M req.	Recordkeeping	41
MLOAD	340-028-0640(4)	19	VOC	Curtailment	Recordkeeping	42

12. The permittee shall not cause or allow the emissions of any air contaminant into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is equal to or greater than 20% opacity, excluding uncombined water, from all visible emission sources of emissions unit BOILER.

Opacity shall be measured in accordance with condition 36. [OAR 340-021-0015(2) and 340-021-0015(3)(a)]

13. The permittee shall not cause or allow the emissions of particulate matter in excess of 0.2 grain per standard cubic foot, corrected to 12% CO<sub>2</sub> or 50% excess air, from fuel burning equipment grouped under emissions unit BOILER. Particulate matter emissions shall be measured in accordance with condition 48. [OAR 340-021-0020(1)(a)]
14. The permittee shall meet the following emissions standards and provisions applicable to the Linnton loading racks (L-TRACK/VRU) and the back-up Willbridge terminal control unit (W-VRU<sub>oil</sub>) at the permitted facility that transfer gasoline products into the delivery tanks and trailers: [OAR 340-022-0130 and 340-022-0137]
  - 14.a. The loading racks shall be equipped with the vapor collection and control system designed to meet the following criteria:
    - 14.a.i. The total volatile organic compound (VOC) emissions from the loading operations shall not exceed 80 milligrams of VOC per liter of gasoline loaded (668 lb VOC/10<sup>6</sup> gal gasoline loaded);
    - 14.a.ii. all organic vapors displaced from the gasoline delivery tanks and trailers during product loading are collected and vented to the vapor control system only;
    - 14.a.iii. each vapor collection system shall be designed to prevent any total organic compounds vapors collected at one loading rack from passing to another loading rack; and
    - 14.a.iv. all vapor lines have fittings which make vapor-tight connections and which close automatically and immediately when disconnected.
  - 14.b. Loading gasoline products into the delivery tanks and trailers shall be limited to the certified vapor-tight tanks and trailers, as verified from one of the following:
    - 14.b.i. A current Oregon leak test certification form for the delivery vessel is on file at the terminal; or
    - 14.b.ii. a valid Oregon delivery vessel certification sticker, as specified in OAR 340-022-0137(1)(c), is clearly displayed on the delivery vessel.
  - 14.c. The permittee shall ensure that the following operation and maintenance (O&M) requirements associated with the gasoline loading operations are met:
    - 14.c.i. The vapor collection and liquid loading equipment shall be operated in a manner to prevent gauge pressure in the delivery tank from exceeding 4,500 pascals (Pa [18 inches of H<sub>2</sub>O]) and vacuum from exceeding 1,500 Pa (6 in H<sub>2</sub>O) during product loading;
    - 14.c.ii. no gasoline shall be loaded into the delivery vessel unless the vessel is equipped to be compatible with the terminal's vapor collection system, and vapor return hose is properly connected;
    - 14.c.iii. allow no more than 10 cubic centimeters (cm<sup>3</sup>) drainage per disconnect on the basis of 5 consecutive disconnects;
    - 14.c.iv. ensure no visible liquid gasoline leaks during the loading operations; and.

- 14.c.v. if more than five (5) gallons are spilled, the permittee shall report the spillage in accordance with general condition G6, the excess emissions reporting requirements.
15. In addition to meeting all the provisions set forth in Condition 14, except for and in lieu of item 14.a.i, the total volatile organic compound (VOC) emissions from the Willbridge loading racks (W-TRACK/VUR) shall not exceed 35 milligrams of VOC per liter (292 lb VOC/10<sup>6</sup> gal) of gasoline loaded. [40 CFR 60.502(b)]
16. Except as provided in condition 16.g, the external floating roof storage tanks (EXTANK) shall be equipped with the closure device consisting of two seals, one above the other, and meet the following equipment standards and provisions: [OAR 340-022-0160]
- 16.a. The primary seal is to be either a metallic shoe seal, a liquid-mounted seal, or a vapor-mounted seal; and must comply with the following specifications:
- 16.a.i. The accumulated area of gaps between the tank wall and the vapor-mounted seal shall not exceed 21.2 square centimeters per meter (cm<sup>2</sup>/m [1 in<sup>2</sup>/ft]) of tank diameter, and the width of any portion of any gap shall not exceed 1.27 cm (0.5 in).
- 16.a.ii. The accumulated area of gaps between the tank wall and the metallic shoe seal or the liquid-mounted seal shall not exceed 212 square centimeters per meter (cm<sup>2</sup>/m [10 in<sup>2</sup>/ft]) of tank diameter, and the width of any portion of any gap shall not exceed 3.81 cm (1.5 in).
- 16.a.iii. If metallic shoe seal is used, one end of metallic shoe must extend into the stored liquid and the other end must extend to a minimum vertical distance of 61 cm (24 in) above the stored liquid surface.
- 16.b. The secondary seal must be installed above the primary seal such that it completely covers the space between the roof edge and the tank wall, in accordance with the following specifications:
- 16.b.i. The accumulated area of gaps between the tank wall and the secondary seal used in combination with a metallic shoe or liquid-mounted primary seal shall not exceed 21.2 cm<sup>2</sup> per meter (1 in<sup>2</sup>/ft) of tank diameter; and
- 16.b.ii. the width of any portion of any gap between the tank wall and the secondary seal used in combination with a metallic shoe or liquid-mounted primary seal shall not exceed 1.27 cm (0.5 in). There shall be no gaps between the tank wall and the secondary seal used in combination with a vapor-mounted primary seal.
- 16.b.iii. The permittee is exempted from the requirements for secondary seal gap criteria established in this condition when performing gap measurements or inspections of the primary seal, as conducted per condition 39.c of this permit.
- 16.c. All openings in the external floating roof, except automatic bleeder vents, rim space vents, and leg sleeves shall be equipped with:
- 16.c.i. Covers, seals, or lids that remain closed except for when the openings are in actual use; and
- 16.c.ii. projections that remain below the liquid surface at all times when projections into the tank are necessary.

- 16.d. Automatic bleeder vents must be closed at all times except when the roof is being floated off or being landed on the roof leg supports.
  - 16.e. Rim vents are set to open only when the roof is being floated off the leg supports, or at the manufacturer's recommended setting.
  - 16.f. Emergency roof drains must be provided with slotted membrane fabric covers, or equivalent, which cover over at least 90 percent of the area of the drain opening.
  - 16.g. Any storage tank grouped under EXTANK storing VOL with a true vapor pressure of less than 1.5 psia at the storage temperature is exempted from the requirements of this condition and the associated monitoring specified in condition 39.
17. Except as provided in condition 17.g, all internal floating roof storage tanks (INTANK), including the fixed roof tanks identified in condition 4 once they are modified, shall be equipped with an internal floating cover that meets the following equipment standards and provisions: [OAR 340-022-0160]
- 17.a. The internal floating cover shall be equipped with a continuous closure device (primary seal) between the tank wall and the cover edge.
  - 17.b. The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during intervals when the storage vessel is completely emptied or subsequently emptied and refilled. During the period the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible.
  - 17.c. Each opening in the cover except for automatic bleeder vents and the rim space vents is to be provided a projection below the liquid surface.
  - 17.d. Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, stub drains and leg sleeves is to be equipped with a cover, seal, or lid which is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use.
  - 17.e. Automatic bleeder vents are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.
  - 17.f. Rim vents are to be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting.
  - 17.g. Any storage tank grouped under INTANK storing VOL with a true vapor pressure of less than 1.5 psia at the storage temperature is exempted from the requirements of this condition and the associated monitoring specified in condition 40.
18. All fixed roof storage tanks grouped under FIXTANK having a storage capacity greater than 39,000 gallons shall not store gasoline or other VOL with a true vapor pressure, as stored, greater than 1.52 psia at actual monthly average storage temperature. [OAR 340-022-0160(1)]

Exemption: The Willbridge terminal fixed roof storage tanks (W-FLXTANK) where VOC emissions are controlled by the solvent collection and recovery system are exempt from this condition and may store products with higher vapor pressure, provided the control unit is design to reduce the (inlet) VOC emissions by at least 95 percent by weight, or at least equivalent to the control provided by EXTANK or INTANK specified in conditions 16 or 17, as verified from the results of the test conducted per condition 37 or 38.

19. The permittee shall curtail any uncontrolled barge loading from 2:00 a.m. until 2:00 p.m. when a Clean Air Action (CAA) day is declared by the Department. If the Department declares a second CAA day before 2:00 p.m. of the first curtailment period, then the permittee shall continue to curtail any uncontrolled barge loading for an additional 24 hours until 2:00 p.m. on the second day. If a third CAA day in a row is declared, then uncontrolled barge loading shall be allowed for a 12 hour period starting at 2 p.m. on the second CAA day and ending at 2 a.m. on the third CAA day. Uncontrolled barge loading shall be curtailed from 2 a.m. until 2 p.m. on the third CAA day. This curtailment and loading pattern will repeat if CAA days continue beyond a third day. The permittee is exempt from having to curtail barge loading operations during CAA days if the barge loading operations are controlled by a vapor recovery unit capable of reducing the VOC emissions by at least 90%, or other equivalent control system and/or method approved by the Department. [OAR 340-028-0640(4)]

**Table-III. Emission Limits and Standards applicable to Insignificant Activities**

Applicable Requirements		Pollutant/ Parameter	Limit/ Standard
OAR	Cond Number		
340-030-0500	20	opacity	20%
340-021-0015(2)	21	opacity	20%
340-021-0020(1)(b)	22	PM/PM <sub>10</sub>	0.1 gr/dscf
340-021-0030(1)(b)	23	PM/PM <sub>10</sub>	0.1 gr/dscf
340-021-0060(2)	24	Fugitive/dust	no nuisance
340-022-0180	25	VOC	Equip. spec & O&M.
340-022-0930(4) & 1030(4)	26	VOC	Coating Specification
340-030-0520	27	PM	< 250 micron

20. The permittee shall not cause or allow the emissions of any air contaminant into the atmosphere for a period or periods aggregating more than thirty (30) seconds in any one hour which is equal to or greater than 20% opacity, excluding uncombined water, from any non-fuel burning insignificant source. Opacity shall be measured in accordance with condition 48. [OAR 340-030-0500] [State-only enforceable].
21. The permittee shall not cause or allow the emissions of any air contaminant into the atmosphere for a period or periods aggregating more than three (3) minutes in any one hour which is equal to or greater than 20% opacity, excluding uncombined water, from any fuel burning insignificant source. Opacity shall be measured in accordance with condition 48. [OAR 340-021-0015(2)]
22. The permittee shall not cause or allow the emissions of particulate matter in excess of 0.1 grain per standard cubic foot, corrected to 12% CO<sub>2</sub> or 50% excess air, from any new fuel-burning insignificant source.

Particulate matter emissions shall be measured in accordance with condition 48. [OAR 340-021-0020(1)(b)]

23. The permittee shall not cause or allow the emissions of particulate matter in excess of 0.1 grain per standard cubic foot, from any new non-fuel-burning insignificant source. Particulate matter emissions shall be measured in accordance with condition 48. [OAR 340-021-0030(1)(b)]
24. The permittee shall not cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired or demolished; or any equipment to be operated, without taking reasonable precautions to prevent particulate matter from becoming airborne in accordance with OAR 340-021-0060(2).
25. The permittee shall operate the parts/tools cleaning equipment and dip tanks at the permitted facility in accordance with the following specifications. Non-VOC solvents as defined in OAR 340-22-0100 are exempt from the requirements of this condition: [OAR 340-022-0180].
  - 25.a. Each sink must be equipped with a cover that is readily opened and closed; and
  - 25.b. a cover must be closed during idle periods if the sink contains any free standing solvents.
26. The permittee shall not knowingly use or contract for the use of any noncomplying spray paint or architectural coating manufactured after July 1, 1996. In addition, all VOC-containing architectural coatings shall be stored in closed containers when not being accessed, filled, emptied, maintained, repaired or otherwise used. [OAR 340-022-0930(4) and 340-022-1030(4)]
27. Particulate matter which is larger than 250 microns and which may be deposited upon the real property of another person shall not be emitted. [OAR 340-030-0520] [State-only enforceable]

#### PLANT SITE EMISSION LIMITS

28. The monthly plant site emissions shall not exceed the following [OAR 340-028-1010 and 340-028-1020]:

ED ID	Pollutant	Monthly PSEL	<u>Monitoring Requirements</u>	
			Methods	Condition No.
FIXTANK	VOC	67 tons/month	AP42 Algorithms / Recordkeeping	46.a
EXTANK				46.b
INTANK				46.c
MLOAD			AP42 Algorithms / Recordkeeping	46.d
TRACK			AP42 Algorithms / Recordkeeping	46.e
FDTVOC			API Factors / Recordkeeping	46.f



Monthly PSEL Table continued

ED ID	Pollutant	Monthly PSEL	<u>Monitoring Requirements</u>	
			Methods	Condition No.
BOILER	PM <sub>10</sub>	3.7 tons/month	Fuel usage monitoring, Recordkeeping	45
	CO	1.6 tons/month		
	NO <sub>x</sub>	13 tons/month		
	SO <sub>2</sub>	51.6 tons/month		
	VOC	0.1 tons/month		

29. The annual plant site emissions (tons/year) shall not exceed the following [OAR 340-028-1010 and 340-028-1020]:

EU ID	PM <sub>10</sub>	CO	NO <sub>x</sub>	SO <sub>2</sub>	VOC
Plant Total	7.8	10	53.1	103.7	321.5
Aggregate Insignificant Activities	1	1	1	1	1
Unassigned PSELS	21.7	--	30.9	316.1	--

- 29.a. Unassigned PSELS are available for internal use by the permittee for increases of emissions upon receipt of written approval by the Department.
- 29.b. The PSEL Monitoring is specified in Conditions 44 through 46.

#### MONITORING REQUIREMENTS [OAR 340-028-2130(3)(a)]

##### Facility-wide monitoring:

30. The permittee shall monitor the sulfur content of each batch of residual oil and ASTM grade distillate oil sold, distributed, or used (in boilers), in accordance with one of the following methods or procedures:
- 30.a. Analyze or have analyzed by a contract laboratory a composite of representative samples taken by the permittee from each new batch of fuel oil received. Liquid fuels shall be analyzed using ASTM D129-64, D1552-83, D4057-81, or 2622; or
- 30.b. obtain a sulfur analysis certificate from the vendor for each new batch of fuel oil received; or
- 30.c. for fuel oil received via the (Olympic) pipeline, the permittee shall retain contractual agreements providing that the sulfur contents of residual or distillate fuel oils entering the pipeline from the refinery are within the limits specified in this permit.

31. The permittee shall maintain records of the RVP values (psi) of all gasoline distributed during the control period. RVP values shall be measured according to the procedures established in the most current method of ASTM D323 or established based on batch certifications from suppliers. The permittee shall summarize the amount (gallons) and RVP values (psi) on a monthly basis and submit the monthly RVP report to the Department by no later than the 15<sup>th</sup> day after the end of each calendar month of the control period. [OAR 340-022-0300(5)]. The report shall summarize the amount of gasoline and gasohol distributed in accordance with the following categories:
  - 31.a. Gallons with RVP values  $\leq 7.8$  psi
  - 31.b. Gallons with RVP values  $> 7.8$  psi and  $\leq 9.0$  psi
  - 31.c. Gallons with RVP values  $> 9.0$  and  $\leq 10.5$  psi ;
  - 31.d. Gallons with RVP values  $> 10.5$  and  $\leq 11.5$  psi ; and
  - 31.e. Gasoline/gasohol with the RVP values greater than 11.5 psi.
32. During the applicable control period, as specified in OAR 340-022-0460 through 340-022-0650, the permittee shall comply with the monitoring, recordkeeping, and reporting requirements associated with the oxygenated fuel standards of condition 8.
33. The permittee shall comply with the monitoring, recordkeeping, and reporting requirements associated with the oxygenated fuel standards of condition 9 during the control period, as specified in OAR 340-022-0460 through 340-022-0650.
34. For the purpose of determining compliance with the equipment specifications of condition 10, the permittee shall have the means (e.g., physical inspection) to show or keep readily accessible records showing the applicable storage vessels are built to the specifications.
35. The permittee shall record all written complaints or complaints received via telephone or in person by the responsible official or a designated appointee that specifically refer to a complaint of odor from the permitted facility. The log shall also record permittee's actions to investigate, make a determination as to the validity of the complaint, and resolve the problem within two working days, if possible. The permittee shall notify the Department if the problem is not resolved.

Emissions Unit specific monitoring:

36. Except as provided in condition 36.f, the permittee shall conduct visible emissions survey at each of the fuel burning equipment grouped under emissions units BOILER, in accordance with the following procedures and frequencies:
  - 36.a. At a minimum of once per week, the permittee shall conduct a six (6) minute visible emission survey at each monitoring point using the procedures outlined in EPA Method 22. The minimum monitoring frequency specified is also the required interval between two consecutive monitoring periods.

- 36.b. All visible emissions observations shall be conducted during period when the equipment is operating.
- 36.c. If visible emissions, from an individual monitoring point, are detected for more than 5% (18 seconds) of the survey time, an EPA Method 9 test shall be conducted on that monitoring point for a six (6) minute period in accordance with the Department's Source Sampling Manual. If any of the observations during the specified 6-minute period exceed the applicable 20% opacity limit, the observation period shall continue until 60 minute of observations have been completed or until an exceedance of the opacity standard in condition 12 has been documented.
- 36.d. If the observer is unable to conduct the survey and/or EPA Method 9 tests due to visual interference caused by other visible emissions sources (e.g. fugitive emissions during high wind conditions) or due to weather conditions such as fog, heavy rain, or snow, the observer shall note such conditions on the data observation sheet and make at least three attempts in same day to conduct the surveys and/or tests at approximately 2 hours intervals throughout the day. If no observations are made for that day, the observer shall continue to attempt to conduct the survey and/or EPA Method 9 daily until a valid observation is made.
- 36.e. If visible emissions surveys conducted during 10 consecutive observation weeks show no visible emissions for a particular source, the permittee may reduce the minimum monitoring frequency to once per month for that source. Anytime the monthly visible emissions survey show any visible emissions, or when requested by the Department inspector, the observations for that source shall start over with weekly surveys, as noted in item a of this condition.
- 36.f. As long as any of the equipment grouped under the emissions unit BOILER is fueled by natural gas or LPG, the visual emissions survey required by this condition is waived for that equipment.

For the purpose of verification, the permittee shall monitor and record the type(s) of fuel used in the BOILER fuel burning equipment, as specified in (PSEL monitoring) condition 44.

- 37. For the VOC emissions standards applicable to L-TRACK/VRU and W-TRACK/VRU<sub>oil</sub> (back-up unit), as specified in condition 14, the permittee shall conduct the required inspection and testing in accordance with the following procedures and frequency:
  - 37.a. The permittee shall determine compliance with the mass emission limitation (80 mg/L) of condition 14.a.i by testing, at minimum of once during the permit term, within one year from the date of the permit issuance, or within three years from the date of the most recent source test, in accordance with Method 33 on file with the Department; the methods and procedures delineated in 40 CFR 60.503, subpart XX, as summarized in Attachment 1 of this permit; or an alternative method approved in writing by the Department.
  - 37.b. The permittee shall have the means (e.g., physical inspection) to show or keep readily accessible records showing the TRACK meets the design specifications of conditions 14.a.ii through 14.a.iv of this permit.
  - 37.c. At a minimum of once per permit term, which shall coincide with the testing conducted per condition 37.a, the permittee shall determine compliance with condition 14.c.i by testing in accordance with the following methods and procedures:

- 37.c.i. Using a pressure measurement device (liquid manometer, magnehelic gauge, or equivalent instrument) capable of measuring up to 500 millimeters (mm [20 inches]) of water gauge pressure with the  $\pm 2.5$  mm H<sub>2</sub>O precision;
- 37.c.ii. measure and record the gauge pressure in the gasoline tank being loaded by connecting the pressure measurement device to a pressure tap in the terminal's vapor collection system, located as close as possible to the connection with the gasoline tank truck.
- 37.c.iii. Record the pressure at 5 minute interval while a gasoline tank truck is being loaded, and record the highest instantaneous pressure that occurs during loading.
- 37.c.iv. Every loading position shall be tested at least once during the performance test.
- 37.d. At a minimum of once per month, the permittee shall inspect the vapor collection system, the vapor control system, and each loading rack for liquid and vapor leaks during product transfer operations. For purpose of this inspection, detection methods incorporating sight, sound, or smell are acceptable. Each detection of leak shall be recorded and the source of the leak repaired within 15 calendar days after it is detected. The permittee shall maintain the records of this inspection, and include, at minimum, the following information:
  - 37.d.i. date of inspection;
  - 37.d.ii. findings - location, nature, and severity of each leak, or indicate no leaks;
  - 37.d.iii. leak determination method; and
  - 37.d.iv. corrective action taken - record date each leak repaired and provide reason for any repair interval in excess of 15 days, as applicable.
- 37.e. The permittee shall maintain records of current leak test certifications for all the delivery vessels loading gasoline at the permitted facility, as required per condition 14.b, and the file shall include at minimum the following information on each delivery vessel:
  - 37.e.i. tank owner and address;
  - 37.e.ii. tank identification number;
  - 37.e.iii. tester name, signature, and affiliation;
  - 37.e.iv. test Method used;
  - 37.e.v. testing location and date of test;
  - 37.e.vi. test results: actual pressure change (mm H<sub>2</sub>O) in 5 minutes, average of two runs; and
  - 37.e.vii. update the documentation file, as often as possible, but at least once per year to reflect the delivery vessel status.
- 37.f. The permittee shall require the tank identification number to be recorded as each gasoline tank truck is loaded at the terminal.
- 37.g. The permittee shall cross-check each tank identification number obtained in item 37.f with the permittee's file as maintained per item 37.e, within 2 weeks after the corresponding tank is loaded. If any discrepancy is noted, the permittee shall take corrective steps necessary:
  - 37.g.i. Notify the owner or operator of each non-vapor tight gasoline tank truck, within 3 weeks after the loading has occurred; and
  - 37.g.ii. take steps assuring the non-vapor tight gasoline tank truck will not be reloaded at the facility until vapor tightness documentation for that tank is obtained from the cargo owner.

- 37.h. The permittee may use the alternative procedures to those specified in conditions 37.e through 37.g, upon written application to, and approved in writing by the Department.
38. For the VOC emissions standards applicable to W-TRACK/VRU, as specified in condition 15, the permittee shall conduct the required inspection and testing in accordance with the following procedures and frequency:
- 38.a. At least once during the permit term, the permittee must show the new W-TRACK/VRU system, which replaced the lean oil unit (VRUoil), is capable of operating with respect to the new standard (35 mg/L) set forth in condition 15 by testing in accordance with the EPA methods and procedures delineated in 40 CFR 60.503, subpart XX, as summarized in Attachment 1 of this permit.
- 38.b. The permittee shall continue to adhere to the monitoring requirements specified in condition 37, excluding item 37 .a.
39. For the equipment specifications applicable to EXTANK, as outlined in condition 16, the permittee shall conduct the required inspection and testing in accordance with the following procedures and frequency:
- 39.a. At minimum of once during each semi-annual reporting period, the permittee shall conduct visual and other inspections necessary to ensure all the tank parts are functioning properly, as outlined in conditions 16.c through 16.f.
- 39.b. At minimum of once during each annual reporting period, the permittee shall determine compliance with the secondary seal specifications outlined in condition 16.b of this permit by:
- 39.b.i. physically measuring the length and width of all gaps around the entire circumference of the secondary seal in each place where a 0.32 cm (1/8 in) uniform diameter probe passes freely (without forcing or binding against the seal) between the seal and tank wall; then
- 39.b.i.(1) continue as necessary with probes of various width to accurately measure the actual distances from the tank wall to the seal and multiply such width by its respective circumferential distance; and
- 39.b.i.(2) add the gap surface area of each gap location, divide the sum by its nominal diameter of the tank, and compare the result to the standard in condition 16.b.i.
- 39.b.ii. make records of all places where the width of any gap between the tank wall and the secondary seal used in combination with a metallic shoe or liquid-mounted primary seal that exceeded 1.27 cm (1/2 in); and
- 39.b.iii. make records of all places where a 0.32 cm (1/8 in) uniform diameter probe (or smaller) passes freely through the width of any gap between the tank wall and the secondary seal used in combination with vapor-mounted primary seal.
- 39.c. At minimum of once during the permit term, by no later than 5 years from the date of the previous inspection, or as required per condition 39.d, which ever is sooner, the permittee shall determine

compliance with the primary seal specifications outlined in condition 16.a of this permit using the same measuring methods specified in item 39.b of this condition, except as noted below:

- 39.c.i. In lieu of monitoring specified in item 39.b.ii, make records of all places where the width of any gap between the tank wall and metallic shoe or liquid-mounted primary seal that exceeded 3.81 cm (1.5 in); and
  - 39.c.ii. in lieu of monitoring specified in item 39.b.iii, make records of all places where the width of any gap between the tank wall and the vapor-mounted primary seal that exceeded 1.27 cm (0.5 in); and
  - 39.c.iii. all primary seal inspections or gap measurements which require removal or dislodging of the secondary seal shall be accomplished as rapidly as possible and the secondary seal shall be replaced as soon as possible.
- 39.d. If storage tank ceases to store volatile organic liquids (VOL) for a period of 1 year or more, subsequent introduction of VOL into the vessel shall be considered an initial fill; and the measurements of gaps between the tank wall and the primary seal and the secondary seal shall be performed within 60 days of the initial fill with VOL.
- 39.e. The permittee shall notify the Department Northwest Region in writing at least 7 days prior to conducting required primary or secondary seal compliance inspection in condition 39, and provide the Department inspector an opportunity to observe.
40. For the equipment specifications applicable to INTANK, as outlined in condition 17, the permittee shall conduct the visual inspection in accordance with the following procedures and frequency:
- 40.a. At a minimum of once every 12 months, the permittee shall conduct visual and other inspections necessary to ensure all the tank parts are functioning properly, as outlined in condition 17.b through 17.f.
  - 40.b. Each time the vessel is emptied and degassed, prior to filling the storage vessel with VOL, visually inspect the primary seal, and/or the secondary seal if one is in service. of the internal floating roof. If there are holes, tears, or other openings and/or defects in the seal or the seal fabric of the internal floating roof, the permittee shall repair the items before filling the storage vessel.
  - 40.c. For the storage tanks identified in condition 4, once each tank is retrofitted with an internal floating roof, the inspection requirements outlined in this condition shall be conducted prior to and/or within 14 days of the initial filling.
  - 40.d. The permittee shall record in a log the date of the inspection, the result of the inspection, and the corrective actions taken, if any.
41. For condition 18, the permittee shall keep records<sup>(\*\*)</sup> of all products stored in the fixed roof storage tank with a capacity greater than 39,000 gallons.

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<sup>(\*\*)</sup> The PSEL monitoring protocols for FIXTANK already satisfies this recordkeeping requirement and condition 41 is not an additional monitoring.

42. The permittee shall retain a record documenting phone calls received from the Department regarding curtailment of barge loading during or prior to Clean Air Action (CAA) days and document whether barge loading was curtailed or controlled during the declared CAA days.

Plant Site Emission Limits Monitoring:

43. The permittee shall determine compliance with the Plant Site Emissions Limits specified in conditions 28 and 29 in accordance with the procedures, test methods, and frequencies identified in conditions 44 through 46.
44. The permittee shall monitor and maintain monthly and annual records of the following operating parameters:

EMISSIONS UNIT	OPERATING PARAMETER	UNIT	METHOD
MLOAD	Throughput of gasoline and other organic liquid product	gallons	Recordkeeping
TRACK	Throughput of gasoline and other organic liquid product	gallons	Recordkeeping
FIXTANK	Throughput of gasoline and other organic liquid product from each storage tank.	gallons	Recordkeeping
EXTANK	Throughput of gasoline and other organic liquid product from each storage tank.	gallons	Recordkeeping
INTANK	Throughput of gasoline and other organic liquid product from each storage tank.	gallons	Recordkeeping
BOILER	Residual fuel oil burned Distillate fuel oil burned Natural gas burned	gallon gallon 10 <sup>6</sup> ft <sup>3</sup> NG.	Recordkeeping

45. The permittee shall determine the monthly and annual emissions from the emissions unit BOILER, by using the operating parameters obtained per condition 44, and applying to the following formula and the emissions factors listed below:

$$E = \sum (P_i EF_{i,j}) = (P_1 EF_{1,1}) + (P_2 EF_{1,2}) + \dots + (P_n EF_{1,n})$$

where: E = pollutant emissions; tons/month, or tons/year.

P<sub>i</sub> = operating parameter identified in condition 44.

EF<sub>i,j</sub> = emission factor identified for each emissions unit and pollutant listed in Table below.

Boiler emission factor (EF<sub>i,j</sub>) Table

EU ID	FUEL	PM/PM <sub>10</sub> <sup>(1)</sup>	SO <sub>2</sub> <sup>(1)</sup>	NO <sub>x</sub>	CO	VOC	UNIT
BOILER	residual oil	9.19(%S)+3.22	157(%S)	55	5	0.28	lbs/1000 gal
	distillate oil	2	142(%S)	20	5	0.2	lbs/1000 gal
	natural gas	2.5 <sup>(2)</sup>	2.6	140	35	2.8	lbs/10 <sup>6</sup> ft <sup>3</sup>

<sup>(1)</sup> PM<sub>10</sub> & SO<sub>2</sub> EFs for res. oil and SO<sub>2</sub> EF for dist. oil are a function of %S, obtained per facility-wide monitoring condition 30.

<sup>(2)</sup> All EFs are based on AP42 data, except PM<sub>10</sub> EF for NG combustion is DEQ EF based on ST.

46. Except as provided in condition 46.g, the permittee shall calculate the VOC emissions from emissions units FIXTANK, EXTANK, INTANK, MLOAD, TRACK, and FGTVOC using the appropriate production throughput obtained per condition 44, and applying to the AP42 algorithms provided below:

- 46.a. VOC emissions from each fixed roof storage tank grouped under the emissions unit FIXTANK shall be calculated based on the following AP42 algorithms:

$$(1) \quad L_{\text{FIXTANK}} = \text{Total loss} = L_B + L_W \quad (\text{lbs/yr})$$

$$L_B = \text{fixed roof breathing loss} = 2.26 \times 10^2 M_V [P/(P_A - P)]^{0.68} D^{1.73} H^{0.51} \Delta T^{0.5} F_P C K_C$$

$$L_W = \text{fixed roof working loss} = 2.4 \times 10^5 M_V P V N K_N K_C$$

where:

$M_V$  = average vapor molecular weight

$P$  = true vapor pressure at bulk liquid conditions, psia; see TABLE-2, Attachment 2

$P_A$  = average atmospheric pressure at tank location, psia; default = 14.7 psi

$D$  = tank diameter, feet

$H$  = average vapor space height - if not available, assume  $H$  equals 1/2 the tank height.

$\Delta T$  = average ambient diurnal temperature change, °F; default = 15°F (assumption)

$F_P$  = paint factor; see TABLE-1, Attachment 2

$C$  = adjustment factor for small tanks with  $D < 30$  feet

$= 0.0771 (D) - 0.0013 (D^2) - 0.1334$ ; otherwise  $C = 1$  for  $D \geq 30$ .

$K_C$  = product factor; for crude oil,  $K_C = 0.65$ . For all other organic liquids,  $K_C = 1.0$ .

$V$  = tank capacity, gallons

$N$  = number of turnovers per year = Annual throughput (gal) divided by tank capacity,  $V$

$K_N$  = turnover factor; for  $N > 36$ ,  $K_N = (180 + N)/6N$ . For  $N \leq 36$ ,  $K_N = 1$

- 46.a.i. Annual emission from FIXTANK is the sum of emissions from individual fixed roof storage tanks:

$$E_{\text{FIXTANK, ANNUAL}} = \sum L_{\text{FIXTANK}} / 2000 \quad (\text{tons/year})$$

- 46.a.ii. Monthly emissions from FIXTANK is calculated using the monthly throughput data ( $N$  and  $K_N$ ) in  $L_W$ :

$$E_{\text{FIXTANK, MONTHLY}} = \sum L_B / 12 + \sum L_W \quad (\text{lbs/month})$$

- 46.b. VOC emissions from each external floating roof storage tank grouped under the emissions unit EXTANK shall be calculated based on the following AP42 algorithms:



$$(2) \quad L_{\text{EXTANK}} = L_R + L_{\text{WD}} + L_{\text{RF}} \quad (\text{lbs/yr})$$

$$(3) \quad L_R = \text{rim seal loss} = K_S v^n P^* D M_V K_C$$

$$(4) \quad L_{\text{WD}} = \text{withdrawal loss} = \frac{(0.943) Q C_F W_L}{D} [1 + (N_C F_C)/D]$$

$$L_{\text{RF}} = \text{roof fitting loss} = F_F P^* M_V K_C$$

where:

$K_S$  = seal factor for average of tight fit, see TABLE-4, Attachment 2  
 $v$  = average wind speed at the tank site; may use the nearest local weather station data; or default = 7 mph (3 meter/sec.; reference - 1993 DEQ Annual Report, pg. 7)  
 $n$  = seal-related wind speed exponent, see TABLE-4, Attachment 2  
 $K_C$  = product factor; for crude oil,  $K_C = 0.4$ . For all other organic liquids,  $K_C = 1.0$ .  
 $Q$  = annual throughput, bbl/yr  
 $C_F$  = shell clingage factor, bbl/1000 ft<sup>2</sup>, see TABLE-5, Attachment 2  
 $W_L$  = liquid density, lbs/gal  
 $N_C$  = number of columns, dimensionless,  $N_C = 0$  for external floating roof tank.  
 Therefore, the last part "[1 + (N<sub>C</sub> F<sub>C</sub>)/D]" of equation (4) drops out.  
 $P$ ,  $P_A$ ,  $D$ ,  $M_V$ , etc. are as defined for equation (1) of this condition.

$$P^* = \text{vapor pressure function} = \frac{(P/P_A)}{[1 + [1 - (P/P_A)]^{0.5}]^2}$$

$$F_F = \text{total roof fitting loss factor (lb-mol/yr)} \\ = [(N_{F1} K_{F1}) + (N_{F2} K_{F2}) + \dots + (N_{Fn} K_{Fn})], \text{ where:}$$

$N_{Fi}$  = number of roof fittings of a particular type ( $i = 0, 1, 2, \dots, n$ ), dimensionless, see TABLES 6, 7, and 8, Attachment 2  
 $n$  = total number of different types of fittings, dimensionless  
 $K_{Fi}$  = roof fitting loss factor for a particular type of fitting ( $i = 0, 1, 2, \dots, n$ ), lb-mol/yr. For individual fitting types,  $K_{Fi}$  can be estimated as follows:

$$K_{Fi} = K_{fai} + K_{fbi} v^{mi}, \text{ where;}$$

$K_{fai}$  = loss factor for a particular type of roof fitting (lb-mol/yr), see TABLE-6, Attachment 2

$K_{fbi}$  = loss factor for a particular type of roof fitting (lb-mol/yr [mph]<sup>m</sup>), see TABLE-6, Attachment 2

$v$  = average wind speed, mph  
 $m_i$  = loss factor for a particular type of roof fitting  
 see TABLE-6, Attachment 2

46.b.i. Annual emission from EXTANK is the sum of emissions from individual external floating roof storage tanks:

$$E_{\text{EXTANK, ANNUAL}} = \sum L_{\text{EXTANK}} / 2000 \text{ (tons/year)}$$

46.b.ii. Monthly emissions from EXTANK is calculated using the monthly throughput data ( $Q$ , bbl/mo) in  $L_{\text{WD}}$ :

$$E_{\text{EXTANK, MONTHLY}} = (\sum L_R + \sum L_{\text{RF}}) / 12 + \sum L_{\text{WD}} \text{ (lbs/month)}$$

46.c. VOC emissions from each internal floating roof storage tank grouped under the emissions unit INTANK shall be calculated based on the following AP42 algorithms:

$$(5) \quad L_{\text{INTANK}} = L_R + L_{\text{WD}} + L_F + L_D \text{ (lbs/yr)}$$

$L_R$  is as defined in equation (3) where  $n = 0$ ;  $v^n = 1$ : wind does not affect  $L_R$ .  
 $L_{\text{WD}}$  is as defined in equation (4).

$$L_F = \text{deck fitting loss} = F_F P^* M_V K_C$$

$$L_D = \text{deck seam loss} = K_D S_D D^2 P^* M_V K_C$$

where:  $F_F$  = total deck fitting loss factor =  $[(N_{F1} K_{F1}) + (N_{F2} K_{F2}) + \dots + (N_{Fn} K_{Fn})]$

$N_{Fi}$  = number of deck fittings of a particular type. see TABLES 3 and 9, Attachment 2

$K_{Fi}$  = deck fitting loss factor for a particular type, see TABLE 9, Attachment 2

$n$  = total number of different types of fittings

$N_C$  = number of columns, dimensionless. For internal floating roof tank with column-supported fixed roof,  $N_C$  = use tank-specific information, or see TABLE-3, Attachment 2

$F_C$  = effective column diameter, feet (column perimeter/ $\pi$ ). For internal floating roof tank with column-supported fixed roof, use tank-specific effective column diameter, or  $F_C = 1.1$  for 9-inch by 7-inch built-up columns; 0.7 for 8-inch-diameter pipe columns, and 1.0 if column construction details are not known.

$K_D$  = deck seam loss per unit seam length factor = 0 for welded deck; 0.34 for bolted deck

$S_D$  = deck seam length factor = total length of desk seams divided by the area of the deck;

if not known, refer to TABLE 10, Attachment 2  
P, P<sub>A</sub>, D, M<sub>v</sub>, Kc, etc. are as defined for equation (2) of this condition

- 46.c.i. Annual emission from INTANK is the sum of emissions from individual internal floating roof storage tanks:

$$E_{\text{INTANK, ANNUAL}} = \sum L_{\text{INTANK}} / 2000 \text{ (tons/year)}$$

- 46.c.ii. Monthly emissions from INTANK is calculated using the monthly throughput data (Q, bbl/mo) in L<sub>WD</sub>:

$$E_{\text{INTANK, MONTHLY}} = (\sum L_R + \sum L_F + \sum L_D) / 12 + \sum L_{WD} \text{ (lbs/month)}$$

- 46.d. VOC emissions from marine loading operations, including lightering operations, grouped under the emissions unit MLOAD shall be calculated based on the following AP42 algorithms:

$$(6) \quad L_{\text{MLOAD}} = Q \text{ EF } (1 - \text{CE}/100\%) \text{ (lbs/unit time)}$$

where: CE = Over-all control efficiency (%) of W-VRU; For L-MLOAD, CE = 0.

	MLOAD EF (lbs/10 <sup>3</sup> gal)	
	Tank Ship & Ocean barges	Barges
Gasoline	2.6	3.9
Jet Kerosene	0.013	
Dist. Oil No.2	0.012	
Res. Oil No.6	9 x 10 <sup>-3</sup>	
Naphtha	3.875	
VGO	5.5 x 10 <sup>-3</sup>	
Ethanol	0.342	

- 46.d.i. Annual emission from MLOAD is calculated by substituting annual throughput, Q (10<sup>3</sup> gal), in equation (6):

$$E_{\text{MLOAD, ANNUAL}} = L_{\text{MLOAD}} / 2000 \text{ (tons/year)}$$

- 46.d.ii. Monthly emission from MLOAD is calculated by substituting monthly throughput, Q, in equation (6):

$$E_{\text{MLOAD, MONTHLY}} = L_{\text{MLOAD}} / 2000 \text{ (tons/month)}$$

- 46.e. VOC emissions from tanker truck/trailer loading operations grouped under the emissions unit TRACK shall be calculated by using the equation (7) below, which is based on the same AP42 algorithms of item 46.d of this condition, in addition to the efficiency (eff.) determined from the source test:

$$(7) \quad L_{\text{TRACK}} = (1 - \text{eff.}/100) Q D_L \quad (\text{lbs/unit time})$$

$$D_L = \text{displacement loss} = 12.46 (S P \text{ MW}) / T \quad (\text{lbs}/10^3 \text{ gal})$$

where: Q = throughput in "x1000" gallon  
 S = saturation factor, see TABLE-11, Attachment 2  
 P = true vapor pressure of liquid loaded, psia (see equation "P" below, only if conversion of Reid vapor pressure ( $P_{\text{RVP}}$ ) to true vapor pressure (P) is needed)  
 MW = molecular weight of vapors. For gasoline (mixture) with known  $P_{\text{RVP}}$ ;  
 $\text{MW}_{\text{GAS}} = 72.833 - 1.3183(P_{\text{RVP}}) + 0.15079(P_{\text{RVP}})^2 - 0.0087302(P_{\text{RVP}})^3$   
 T = stock temperature, °R (= °F + 459.6)

$$P = \exp[(0.7553 - 413/T) S_D^{1/2} \log(P_{\text{RVP}}) - (1.854 - 1042/T) S_D^{1/2} + (2416/T - 2.013) \log(P_{\text{RVP}}) - (8742/T) + 15.64]$$

where:  $P_{\text{RVP}}$  = Reid vapor pressure, psia  
 $S_D$  = slope of American Society for Testing and Materials distillation curve at 10% evaporated. For gasoline,  $S_D = 3$

eff. = the over-all control efficiency (%) of the vapor recovery unit (VRU), as determined from source testing.

46.e.i. Annual emission from TRACK is calculated by substituting annual throughput, Q, in equation (7):

$$E_{\text{TRACK, ANNUAL}} = L_{\text{TRACK}} / 2000 \quad (\text{tons/year})$$

46.e.ii. Monthly emission from TRACK is calculated by substituting monthly throughput, Q, in equation (7):

$$E_{\text{TRACK, MONTHLY}} = L_{\text{TRACK}} / 2000 \quad (\text{tons/month})$$

46.f. VOC emissions from auxiliary material handling equipment grouped under the emissions unit FGTVOC shall be calculated using the equation (8), based on emission factors (EF<sub>i</sub>) provided in the American Petroleum Institute (API) Publication No. 4588 (5/93):

$$(8) \quad L_{\text{FGTVOC}} = \sum [N_i \text{ EF}_i] \quad (\text{lbs/hr})$$

where:  $N_i$  = number of component "i"  
 $\text{EF}_i$  = API emission factor for component "i",  $\text{lbs}_{\text{VOC}}/\text{hr}$

Component ("i") Type	Average Emission Factor, $EF_i$ (lbs/hr)	
	Liquid Service	Vapor Service
Flanges	$2.3 \times 10^{-5}$	$6.7 \times 10^{-5}$
Valves	$1.5 \times 10^{-4}$	$1.6 \times 10^{-4}$
Open Ended Lines	$6.5 \times 10^{-3}$	$6.7 \times 10^{-3}$
Pumps (seals)	$9.3 \times 10^{-4}$	$9.3 \times 10^{-4}$
Loading Arm Valves	$8.7 \times 10^{-4}$	$4.5 \times 10^{-2}$
Other	$2.5 \times 10^{-4}$	$1.4 \times 10^{-3}$

46.f.i. Annual emission from FGTVOG is calculated as follow:

$$E_{\text{FGTVOC, ANNUAL}} = (8760/2000) L_{\text{FGTVOC}} \quad (\text{tons/year})$$

46.f.ii. Monthly emission from FGTVOG is calculated as follow:

$$E_{\text{FGTVOC, MONTHLY}} = (24 N_{\text{DAYS}}) L_{\text{FGTVOC}} \quad (\text{lbs/month})$$

where  $N_{\text{DAYS}}$  = number of days in a month; or use the default value of 31 days.

46.f.iii. The permittee shall update the number of component "i" at the time of permit renewal or major modification, whichever is sooner.

46.g. For emissions units FIXTANK, EXTANK, and/or INTANK, the permittee may use the EPA Tank 2.0 program (software), which is based on the same AP42 algorithms identified in this Condition 46; or use the EPA Tank 3.0 or 3.1 program, to calculate the VOC emissions. The permittee may use another version of EPA Tank program (software) if approved in writing by the Department.

#### **TEST METHODS AND PROCEDURES** [OAR 340-028-2130(1)]

47. Unless otherwise specified in this permit, all testing shall be conducted in accordance with the Department's Source Sampling Manual. [OAR 340-028-1100]

48. Although source testing is not required by this permit for the permit conditions listed below, if source testing is conducted in addition to the monitoring specified in this permit, the permittee shall use the following test methods and averaging times to measure the pollutant emissions:

Permit Condition	Test Method	Averaging Time	Special Conditions
23	ODEQ Methods 5, 7, or 8	average of three one-hour test runs	ODEQ Method 8 is for sources with exhaust gases at essentially ambient conditions (e.g. material handling cyclones); ODEQ Method 7 is for direct contact combustion or other heat sources (e.g., particle and veneer dryers); ODEQ Method 5 is for indirect contact fuel burning equipment (e.g., boilers) and any other source.

Permit Condition	Test Method	Averaging Time	Special Conditions
21	Modified EPA Method 9 in accordance with	aggregate of three (3) minutes in any 60 minute period	Each Method 9 observation shall represent a period of 15 seconds for the purpose of determining the aggregate amount of time in 60 minute period that the visible emissions are greater than the opacity limit. The test duration may be less than 60 minutes if a violation of the standard is documented before the full 60 minute observation period is completed.
20	the Department's Source Sampling Manual	aggregate of thirty (30) seconds in any 60 minute period	
13, 22	ODEQ Method 5	average of three test runs	The sample time for each test run shall be no less than one hour (31.8 dscf) and no longer than eight hours.

**RECORDKEEPING REQUIREMENTS** [OAR 340-028-2130(3)(b)]

49. The permittee shall maintain the following general records of monitoring required by conditions 30 through 46:
- 49.a. the date, place as defined in the permit, and time of sampling or measurements;
  - 49.b. the date(s) analyses were performed;
  - 49.c. the company or entity that performed the analyses;
  - 49.d. the analytical techniques or methods used;
  - 49.e. the results of such analyses;
  - 49.f. the operating conditions as existing at the time of sampling or measurement;
  - 49.g. the records of quality assurance for continuous monitoring systems (including but not limited to quality control activities, audits, calibrations drift checks); and
  - 49.h. records of all physical data and operating parameters used in this permit.
50. The permittee shall maintain the following specific records of required monitoring information that include the following:
- 50.a. Monthly and annual records of product throughputs from MLOAD and TRACK;
  - 50.b. monthly and annual records of product throughputs for each storage tank grouped under FIXTANK, INTANK, and EXTANK;
  - 50.c. monthly and annual records of the type and amount of fuels used in BOILER;
  - 50.d. fuel sulfur analyses certificates, if any;
  - 50.e. complaint log and investigation reports;
  - 50.f. visible emissions observation reports; and
  - 50.g. records of all inspections and inspection results, as required by this permit.
51. The permittee shall retain records of all required monitoring data and support information for a period of at least five (5) years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. All existing records required by the previous Air Contaminant Discharge Permit shall also be retained for five (5) years.

**REPORTING REQUIREMENTS** [OAR 340-028-2130(3)(c)]

52. The permittee shall submit four (4) copies of the first semi-annual monitoring report, covering the period from January 1 to June 30, using Department approved forms, by July 31, unless otherwise approved in writing by the Department. One copy of the report shall be submitted to the Air Quality Division, two copies to the regional office, and one copy to the EPA Region X office. The semi-annual monitoring report shall include the semi-annual compliance certification.
53. The permittee shall submit four (4) copies of the annual monitoring report, using Department approved forms, by February 15, unless otherwise approved in writing by the Department. One copy of the report shall be submitted to the Air Quality Division, two copies to the regional office, and one copy to the EPA Region X office.
54. The annual monitoring report shall consist of:
- 54.a. the emission fee report;
  - 54.b. the excess emissions upset log; [OAR 340-028-1440]
  - 54.c. the emission statement; [OAR 340-028-1520]
  - 54.d. the second semi-annual compliance certification, covering the period from July 1 to December 31; [OAR 340-028-2160] and
  - 54.e. specific annual emission reporting requirements:

EMISSIONS UNIT	ANNUAL PARAMETERS	UNIT
FIXTANK	VOC emissions Products throughput	tons/yr gallons/yr
EXTANK	VOC emissions Products throughput	tons/yr gallons/yr
INTANK	VOC emissions Products throughput	tons/yr gallons/yr
MLOAD	VOC emissions Products throughputs	tons/yr gallons/yr
TRACK	VOC emissions Products throughputs	tons/yr gallons/yr
FGTVOC	VOC emissions	tons/yr
BOILER	Criteria pollutants emissions Distillate Oil burned Residual Oil burned N.G. burned	tons/yr gallons/yr gallons/yr 10 <sup>6</sup> ft <sup>3</sup> /yr

- 54.e.i. annual VOC emissions from each of the emissions units FIXTANK, EXTANK, INTANK, MLOAD, TRACK, and the annual products throughputs associated with each emissions unit identified ;

- 54.e.ii. annual VOC emissions from FGTVOC;  
 54.e.iii. annual emissions of criteria pollutants from the emissions unit BOILER, and associated fuel usage.

54.f. annual summary of monthly emissions:

EMISSIONS UNIT	MONTHLY PARAMETERS	UNIT
FIXTANK	VOC emissions	tons/mo
	Products throughputs	gallons/mo
EXTANK	VOC emissions	tons/mo
	Products throughputs	gallons/mo
INTANK	VOC emissions	tons/mo
	Products throughputs	gallons/mo
MLOAD	VOC emissions	tons/mo
	Products throughputs	gallons/mo
TRACK	VOC emissions	tons/mo
	Products throughputs	gallons/mo
FGTVOC	VOC emissions	tons/mo
BOILER	Criteria pollutants emissions	tons/mo
	Distillate Oil burned & S-content	gallons/mo, %S
	Residual Oil burned & S-content	gallons/mo, %S
	N.G. burned	10 <sup>6</sup> ft <sup>3</sup> /mo

- 54.f.i. monthly VOC emissions from each of the emissions units FIXTANK, EXTANK, INTANK, MLOAD, TRACK, and the products throughputs associated with each emissions unit identified ;  
 54.f.ii. monthly VOC emissions from FGTVOC;  
 54.f.iii. monthly emissions of criteria pollutants from the emissions unit BOILER, and associated fuel usage; and  
 54.f.iv. if distillate or residual fuel oil is used in the boiler, report the sulfur content (%).

54.g. other source-specific reporting requirements:

EMISSIONS UNIT	MONITORING CONDITION	PARAMETERS	UNIT
FIXTANK	41 (44)	Name and the vapor pressure (P) of a product with the highest P (psia) stored in the FIXTANK with a capacity greater than 39,000 gallons	product name psia at stored temperature
TRACK	37.d	Physical inspection results - IF applicable	a brief summary
BOILER	36	VE inspection results and/or ST results - IF applicable	opacity, % gr/scf

- 54.g.i. from the (PSEL monitoring) records of products stored in the FIXTANK with a capacity greater than 39,000 gallons, identify the product that has the highest vapor pressure to show compliance with condition 18;



- 54.g.ii. if, and only if, leak is determined from the TRACK inspection conducted per condition 37.d, provide a brief summary of inspection results and corrective actions taken; if no leak is determined, no reporting is necessary.
- 54.g.iii. if, and only if, the opacity violation is noted from the VE survey conducted per condition 36, provide a summary of VE inspection results.
55. The permittee shall submit the following additional reports and/or information to the DEQ - Northwest Region as required by specific conditions within the permit:
- 55.a. Monthly report during the control period, as specified in condition 31;
- 55.b. source test plans/notifications prior to conducting actual test/measurements as specified; and
- 55.c. when requested by the Department, submit all relevant records, data, and support information maintained at the plant site per recordkeeping requirements of conditions 49 through 51.
56. Addresses of regulatory agencies are the following, unless otherwise instructed:

DEQ - Northwest Region	DEQ - Air Quality Division	EPA - Region X
2020 S.W. 4th Avenue, #400 Portland, OR 97201-5884	811 SW Sixth Avenue Portland, OR 97204	Mail Stop OAQ-107 1200 Sixth Avenue Seattle, WA 98101
(503) 229-5263	(503) 229-5359	--

#### **NON-APPLICABLE REQUIREMENTS**

57. Divisions of Chapter 340, Air Quality Oregon Administrative Rules (OARs), currently determined not applicable to the permittee are listed below. [OAR 340-028-2190]
- 57.a. The following OARs are not applicable because the source is not in the source category cited in the rules:
- |                                |  |
|--------------------------------|--|
| Division 021: Rules            | 0210 through 0245.   |
| Division 022: Rules            | 0110, 0120, 0140 through 0153, 0170 through 0220 except 0180, 0400 through 0403, 0405 through 0415.                                |
| Division 024: Rules            | 0025, 0306.  |
| Division 025: Rules            | 0005 through 0430, 0550, 0553, 0554, 0555 through 0580, 0585, 0586, 0590 through 0685, 0690, 0695 through 0735, 0850 through 0905. |
| Division 028: Rules            | 0500 through 0520, 0800 through 0820, 2170, 2180.  |
| Division 031: Entire Division. |  |
| Division 032: Rules            | 0250, 5000, 5530 through 5580.   |
- 57.b. The following OARs are not applicable because the source is outside the special control area, non-attainment area or county cited in the rules:

Division 024: Rules 0301.  
Division 030: Rules 0012 through 0230, 0600 through 0620.

- 57.c. The following OARs are not applicable because the source does not have specific emissions units cited in the rules:

Division 021: Rules 0025, 0027, 0040.  
Division 022: Rules 0055.  
Division 030: Rules 0420, 0530.

- 57.d. The following OARs are not applicable because the source does not sell, distribute, use, or make available for use, the fuel type cited in the rules:

Division 022: Rules 0020.

- 57.e. The following OARs are not applicable because the method/procedure is not used by the facility:

Division 028: Rules 1030, 1040, 1050.  
Division 032: Rules 0300 through 0380.

- 57.f. The following OARs are not applicable because the rules applied in the past and the fees have been paid:

Division 028: Rules 2400 through 2550, 2570.

58. The following federal regulations are not applicable to the permittee at the time of permit issuance because the source is not in the source category cited in the rules:

40 CFR Part 55,  
40 CFR Part 57,  
40 CFR Part 60 (except subparts A, K, Ka, XX, and Appendices),  
40 CFR Part 63 (except subpart A, R, and the Appendices),  
40 CFR Part 61 (except subparts A and M and the Appendices),  
40 CFR Part 68,  
40 CFR Parts 72, 73, 75, 76,  
40 CFR Part 82 (except subpart F),  
40 CFR Parts 85 through 89,  
Section 129 of the FCAA, Solid Waste,  
Section 183(e) of the FCAA, Consumer and commercial products,  
Section 183(f) of the FCAA, Tank Vessels.

## GENERAL CONDITIONS

### G1. General Provision

Terms not otherwise defined in the permit shall have the meaning assigned to such terms in the referenced regulation.

### G2. Reference materials

Where referenced in this permit, the version of the following materials are effective as of the dates noted unless otherwise specified in the permit:

- a. Source Sampling Manual; January 23, 1992 - State Implementation Plan Volume 3, Appendix A4;
- b. Continuous Monitoring Manual; January 23, 1992 - State Implementation Plan Volume 3, Appendix A6; and
- c. All state and federal regulations as in effect on the date of issuance of this permit.

### G3. Compliance [OAR 340-028-2120(3)(n)(C), 340-028-2130(6), and 340-028-2160(4)]

- a. The permittee shall comply with all conditions of the federal operating permit. Any permit condition noncompliance constitutes a violation of the Federal Clean Air Act and/or state rules and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. Any noncompliance with a permit condition specifically designated as enforceable only by the state constitutes a violation of state rules only and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
- b. Any schedule of compliance for applicable requirements with which the source is not in compliance at the time of permit issuance shall be supplemental to, and shall not sanction noncompliance with the applicable requirements on which it is based.
- c. For applicable requirements that will become effective during the permit term, the source shall meet such requirements on a timely basis unless a more detailed schedule is expressly required by the applicable requirement.

### G4. Compliance Monitoring and Enforcement [OAR 340-028-0300, 340-028-1100, 340-028-1120, 340-028-1130, 340-028-1140, 340-028-2130(3), 340-028-2160, 340-032-0270]

- a. For the purpose of submitting semi-annual compliance certification reports, the permittee shall use, at a minimum, the information obtained from the monitoring requirements of this permit. The permittee shall not knowingly falsify or render inaccurate any monitoring device or method required to be maintained or followed by the permit.
- b. The information obtained from the monitoring required by this permit can be used directly for enforcement.

G5. Certification [OAR 340-028-0300, 340-028-2120(5) and 340-028-2160(2)]

Any document submitted to the Department pursuant to this permit shall contain certification by a responsible official of truth, accuracy and completeness. All certifications shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and, complete. The permittee shall promptly, upon discovery, report to the Department a material error or omission in these records, reports, plans, or other documents.

G6. Excess Emissions Reporting [OAR 340-028-1400 through 340-028-1460]

- a. The permittee shall report all excess emissions in accordance with OAR 340-028-1400 through 340-028-1460. In summary, the permittee shall immediately (i.e., as soon as possible but in no case more than one hour after the beginning of the excess emission period) notify the Department by telephone or in person of any excess emission, other than pre-approved startup, shutdown, or scheduled maintenance. Notification shall, to the extent reasonably ascertainable at the time of notification, include the source name, nature of the emissions problem, name of the person making the report, name and telephone number of the contact person for further information, date and time of the onset of the upset condition, whether or not the incident was planned, the cause of the excess emission (e.g., startup, shutdown, maintenance, breakdown, or other), equipment involved in the upset, estimated type and quantity of excess emissions, estimated time of return to normal operations, efforts made to minimize emissions, and a description of remedial actions to be taken. Follow-up reporting shall be made in accordance with Department direction and OAR 340-028-1430(2) and 340-028-1440.
- b. Notification shall be made to the appropriate regional office. Current Departmental telephone numbers are:  
  

Portland: (503) 229-5554	Medford: (541) 776-6010	Bend: (541) 388-6146
Pendleton: (541) 276-4063	Salem: (503) 378-8240	
- c. In the event of any excess emissions which are of a nature that could endanger public health and occur during nonbusiness hours, weekends, or holidays, the permittee shall immediately notify the Department by calling the Oregon Emergency Response System (OERS). The current number is 1-800-452-0311.
- d. If startups, shutdowns, or scheduled maintenance may result in excess emissions, the permittee shall submit startup, shutdown, or scheduled maintenance procedures used to minimize excess emissions to the Department for prior authorization, as required in OAR 340-028-1410 and 340-028-1420. New or modified procedures shall be received by the Department in writing at least 72 hours prior to the first occurrence of the excess emission event. The permittee shall abide by the approved procedures and have a copy available at all times.
- e. The permittee shall notify the Department of planned startup/shutdown or scheduled maintenance events only if required by permit condition or if the source is located in a nonattainment area for a pollutant which may be emitted in excess of applicable standards.
- f. The permittee shall maintain and submit to the Department a log of planned and unplanned excess emissions, on Department approved forms, in accordance with OAR 340-028-1440.

G7. Permit Deviation Reporting [OAR 340-028-2130(3)(c)(B)]

The permittee shall promptly report, by telephone or in person, any deviations from permit requirements that do not cause excess emissions, including those attributable to upset conditions, as defined in the permit, the probable cause of such deviations, and any corrective actions or preventative measures taken. Deviations are instances when any permit condition is violated. "Prompt" is defined as within seven (7) days of the deviation.

G8. Open Burning [OAR Chapter 340, Division 23]

The permittee is prohibited from conducting open burning, except as may be allowed by OAR 340-023-0025 through 340-023-0115.

G9. Asbestos [40 CFR Part 61, Subpart M (federally enforceable), OAR 340-032-5600 through 340-032-05650 and OAR Chapter 340, Division 33 (state-only enforceable)]

The permittee shall comply with OAR 340-032-5600 through 340-032-5650, OAR Chapter 340 Division 33, and 40 CFR Part 61, Subpart M when conducting any renovation or demolition activities at the facility.

G10. Stratospheric Ozone and Climate Protection [40 CFR 82 Subpart F, OAR 340-022-0420]

The permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F, Recycling and Emissions Reduction.

G11. Permit Shield [OAR 340-028-2190]

- a. Compliance with this permit shall be deemed compliance with all applicable requirements as of the date of permit issuance provided that:
  - i. such applicable requirements are specifically identified in the permit, or
  - ii. such applicable requirements are specifically identified in the "Non-Applicable Requirements" section of this permit.
- b. Nothing in this rule or in any federal operating permit shall alter or affect the following:
  - i. the provisions of ORS 468.115 (enforcement in cases of emergency) and ORS 468.035 (function of department);
  - ii. the liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;
  - iii. the applicable requirements of the national acid rain program, consistent with section 408(a) of the FCAA; or
  - iv. the ability of the Department to obtain information from a source pursuant to ORS 468.095 (investigatory authority, entry on premises, status of records).

- c. Sources are not shielded from applicable requirements that are enacted during the permit term, unless such applicable requirements are incorporated into the permit by administrative amendment, as provided in OAR 340-028-2230(1)(h), or significant permit modification.

G12. Inspection and Entry [OAR 340-028-2160(3)]

Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Department of Environmental Quality, or an authorized representative (including an authorized contractor acting as a representative of the EPA Administrator), to perform the following:

- a. enter upon the permittee's premises where an Oregon Title V operating permit program source is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;
- b. have access to and copy, at reasonable times, any records that must be kept under conditions of the permit;
- c. inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
- d. as authorized by the FCAA or state rules, sample or monitor, at reasonable times, substances or parameters, for the purposes of assuring compliance with the permit or applicable requirements.

G13. Fee Payment [OAR 340-028-2560, and 340-028-2580 through 340-028-2740]

The permittee shall pay an annual base fee and an annual emission fee for all regulated air pollutants except for carbon monoxide, any class I or class II substance subject to a standard promulgated under or established by Title VI of the Federal Clean Air Act, or any pollutant that is a regulated air pollutant solely because it is subject to a standard or regulation under section 112(r) of the Federal Clean Air Act. The permittee shall submit payment to the Department of Environmental Quality, Business Office, 811 SW 6th Avenue, Portland, OR 97204, within 30 days of the date the Department mails the fee invoice or August 1 of the year following the calendar year for which emission fees are paid, whichever is later. Disputes shall be submitted in writing to the Department of Environmental Quality. Payment shall be made regardless of the dispute. User-based fees shall be charged for specific activities (e.g., computer modeling review, ambient monitoring review, etc.) requested by the permittee.

G14. Off-Permit Changes to the Source [OAR 340-028-2220(2)]

- a. The permittee shall monitor for, and record, any off-permit change to the source that:
  - i. is not addressed or prohibited by the permit;
  - ii. is not a Title I modification;
  - iii. is not subject to any requirements under Title IV of the FCAA;
  - iv. meets all applicable requirements;
  - v. does not violate any existing permit term or condition; and
  - vi. may result in emissions of regulated air pollutants subject to an applicable requirement but not otherwise regulated under this permit or may result in insignificant changes as defined in OAR 340-028-0110.

- b. A contemporaneous notification, as required in OAR 340-028-2220(2)(b), shall be submitted to the Department and the EPA.
- c. The permittee shall keep a record describing off-permit changes made at the facility that result in emissions of a regulated air pollutant subject to an applicable requirement, but not otherwise regulated under the permit, and the emissions resulting from those off-permit changes.
- d. The permit shield of condition G11 shall not extend to off-permit changes.

G15. Section 502(b)(10) Changes to the Source [OAR 340-028-2220(3)]

- a. The permittee shall monitor for, and record, any section 502(b)(10) change to the source, which is defined as a change that would contravene an express permit term but would not:
  - i. violate an applicable requirement;
  - ii. contravene a federally enforceable permit term or condition that is a monitoring, recordkeeping, reporting, or compliance certification requirement; or
  - iii. be a Title I modification.
- b. A minimum 7-day advance notification shall be submitted to the Department and the EPA in accordance with OAR 340-028-2220(3)(b).
- c. The permit shield of condition G11 shall not extend to section 502(b)(10) changes.

G16. Administrative Amendment [OAR 340-028-2230]

Administrative amendments to this permit shall be requested and granted in accordance with OAR 340-028-2230. The permittee shall promptly submit an application for the following types of administrative amendments upon becoming aware of the need for one, but no later than 60 days of such event:

- a. legal change of the registered name of the company with the Corporations Division of the State of Oregon, or
- b. sale or exchange of the activity or facility.

G17. Minor Permit Modification [OAR 340-028-2250]

The permittee shall submit an application for a minor permit modification in accordance with OAR 340-028-2250.

G18. Significant Permit Modification [OAR 340-028-2260]

The permittee shall submit an application for a significant permit modification in accordance with OAR 340-028-2260.

G19. Construction/Operation Modification [OAR 340-028-2270 and 340-032-0230 (state-only enforceable)]

No permittee shall construct, reconstruct, or make modifications required to be reviewed under OAR 340-028-2270 and 340-032-0230 (HAP sources only), the construction/operation modification rules, without receiving a Notice of Approval in accordance with OAR 340-028-2270. The permittee should allow 60 days for Department review of applications for a construction/operation modification if public notice is not required, or 180 days if public notice is required.

G20. New Source Review Modification [OAR 340-028-1900]

No permittee shall construct or make modifications required to be reviewed under New Source Review (OAR 340-028-1900(1)) without receiving an Air Contaminant Discharge Permit (ACDP) (OAR 340-028-1700). The permittee should allow 180 days for Department review of an ACDP application for New Source Review.

G21. Need to Halt or Reduce Activity Not a Defense [OAR 340-028-2130(6)(b)]

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

G22. Duty to Provide Information [OAR 340-028-2130(6)(e) and OAR 340-028-0300]

The permittee shall furnish to the Department, within a reasonable time, any information that the Department may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Department copies of records required to be retained by the permit.

G23. Reopening for Cause [OAR 340-028-2130(6)(c) and 340-028-2280]

- a. The permit may be modified, revoked, reopened and reissued, or terminated for cause as determined by the Department.
- b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.
- c. A permit shall be reopened and revised under any of the circumstances listed in OAR 340-028-2280(1)(a).
- d. Proceedings to reopen and reissue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists.



G24. Severability Clause [OAR 340-028-2130(5)]

Upon any administrative or judicial challenge, all the emission limits, specific and general conditions, monitoring, recordkeeping, and reporting requirements of this permit, except those being challenged, remain valid and must be complied with.

G25. Permit Renewal and Expiration [OAR 340-028-2120(1)(a)(D) and 340-028-2210]

- a. This permit shall expire at the end of its term. Permit expiration terminates the permittee's right to operate unless a timely and complete renewal application is submitted as described below.
- b. Applications for renewal shall be submitted at least 12 months before the expiration of this permit, unless the Department requests an earlier submittal. If more than 12 months is required to process a permit renewal application, the Department shall provide no less than six (6) months for the owner or operator to prepare an application. Provided the permittee submits a timely and complete renewal application, this permit shall remain in effect until final action has been taken on the renewal application to issue or deny the permit.

G26. Permit Transference [OAR 340-028-2230(1)(d)]

The permit is not transferable to any person except as provided in OAR 340-028-2230(1)(d).

G27. Property Rights [OAR 340-028-0110(9)(c) and 340-028-2130(6)(d)]

The permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations, except as provided in OAR 340-028-2190.

G28. Permit Availability [OAR 340-028-0110(9)(c) and 340-028-2200(2)]

The permittee shall have available at the facility at all times a copy of the Oregon Title V Operating Permit and shall provide a copy of the permit to the Department or an authorized representative upon request.

ALL INQUIRIES SHOULD BE DIRECTED TO:

Northwest Region  
2020 S.W. 4th Avenue, #400  
Portland, OR 97201-5884  
Telephone: (503) 229-5263

## ATTACHMENT 1

### I. Test Methods and Compliance Procedures

The methods and procedures outlined in this Attachment-1 are for determining compliance with the mass emission limitations (e.g., 80 mg/L, 35 mg/L, or 10 mg/L) applicable to TRACK, or the alternative control requirements (e.g., 95% VOC reduction) applicable to the storage tanks as identified in the permit:

1. Immediately prior to a performance test required to determine compliance with Condition 14 (80 mg/L), or the 35 mg/L limit specified in Condition 15 of this permit, all potential sources of vapor and liquid leakage from the terminal's vapor collection system equipment shall be monitored for leaks according to the procedures outlined in Section II of this Attachment 1. The monitoring shall be conducted only while a gasoline tank truck is being loaded; and all leaks shall be repaired prior to conducting the performance test.
  - 1.a. A reading of 10,000 parts per million by volume (ppmv) or greater as methane shall be considered a leak, for the purpose of determining compliance with the VOC limits specified in Condition 14 or 15.
  - 1.b. A reading of 500 parts per million by volume (ppmv) or greater as methane shall be considered a leak, for the purpose of determining compliance with the 10 mg/L (NESHAP) VOHAP limit specified in 40 CFR, Part 63.425.
2. The test procedure is as follows:
  - 2.a. All testing equipment shall be prepared and installed as specified in the appropriate test methods.
  - 2.b. The time period for a performance test shall be not less than 6 hours, during which at least 300,000 L (80,000 gal) of gasoline are loaded. If the throughput criterion is not met during the initial 6 hours, the test shall either continue until the throughput criterion is met, or resumed the next day with another complete 6 hours of testing. As much as possible, testing should be conducted during the 6-hour period in which the highest throughput normally occurs.
  - 2.c. For intermittent vapor control systems:
    - 2.c.i. The vapor holder level shall be recorded at the start of the performance test. The end of the performance test shall coincide with a time when the vapor holder is at its original level.
    - 2.c.ii. At least two startups and shutdowns of the vapor processor shall occur during the performance test. If this does not occur under automatically controlled operation, the system shall be manually controlled.
  - 2.d. An emission testing interval shall consist of each 5-minute period during the performance test. For each interval:
    - 2.d.i. The reading from each measurement instrument shall be recorded.
    - 2.d.ii. The volume exhausted ( $V_{es}$ ) and the average total organic compounds concentration ( $C_e$ ) in the exhaust vent shall be determined, as specified in the appropriate test method. The average total organic compounds concentration shall correspond to the volume measurement by taking into account the sampling system response time.

2.e. The mass emitted during each testing interval shall be calculated as follows:

$$M_{ei} = 10^6 K V_{es} C_e$$

where:  $M_{ei}$  = Mass of total organic compounds (milligrams [mg]) emitted during testing interval i.  
 $V_{es}$  = Volume of air-vapor mixture exhausted (cubic meters [ $m^3$ ]), at standard conditions.  
 $C_e$  = Total organic compounds concentration (measured as carbon) at the exhaust vent (ppmv)  
 $K$  = Density of calibration gas (milligrams/cubic meter [ $mg/m^3$ ]) at standard conditions  
( $1.83 \times 10^6$  for propane;  $2.41 \times 10^6$  for butane).  
 $s$  = Standard conditions, 20°C and 760 millimeters of mercury (mm Hg).

2.f. The total organic compounds mass emissions shall be computed as follows:

$$E = \sum_{i=1}^n M_{ei} / L$$

where:  $E$  = Mass of total organic compounds emitted per volume of gasoline loaded, mg/L.  
 $L$  = Total volume of gasoline loaded, L.  
 $n$  = Number of testing intervals.

2.g. In determining the volume (L) of gasoline dispensed during the performance test, terminal records or readings from gasoline dispensing meters at each loading rack shall be used.

2.h. In determining volume ( $V_{es}$ ) at the exhaust vent:

2.h.i. Method 2B for combustion vapor control systems.

2.h.ii. Method 2A for all other vapor control systems.

2.i. In determining total organic compounds concentration ( $C_e$ ) at the exhaust vent, at each interval, Method 25A or 25B. The calibration gas shall be either propane or butane. The permittee may adjust the emission results to exclude the methane and ethane content in the exhaust vent by any method (e.g., Method 18) approved by the Department.

## II. Leak Detection Methods for Volatile Organic Compounds

3. Permittee is required to carry out a leak detection monitoring program in accordance with the following methods and procedures:

3.a. Monitoring shall be performed in accordance with Method 21 of 40 CFR Part 60, Appendix A.

3.b. The detection instrument shall meet the performance criteria of Method 21.

3.c. The detection instrument shall be calibrated before and after use on each day of its use by the methods specified in Method 21. Failure to achieve a post-use calibration precision of less than

10 percent shall constitute grounds for rejecting all tests performed since the last pre-use calibration. In such cases, required leak tests must be re-performed.

- 3.d. Calibration gases shall be:
  - 3.d.i. Zero air (less than 10 parts per million [ppm] of hydrocarbon in air).
  - 3.d.ii. A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.
- 3.e. The detection instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Method 21. .
- 4. When equipment is tested for compliance with the requirement that there be no detectable emissions, the test shall comply with the following:
  - 4.a. The requirements outlined in the Section II condition 3 of this attachment shall apply and shall be met; and
  - 4.b. The background level shall be determined as set forth in Method 21.
- 5. Guidance documents for Leak detection tests include the following:
  - 5.a. "APTI Course SI 417-Controlling Volatile Organic Compound Emissions from Leaking Process Equipment," EPA-450/2-82-015.
  - 5.b. "Portable Instrument User's Manual for Monitoring VOC Sources." EPA-340/1-86-015.
  - 5.c. "Protocols for Generating Unit-Specific Emission Estimates for Equipment Leaks of VOC and HAP," EPA-450/3-88-010.
  - 5.d. "Petroleum Refinery Enforcement Manual," EPA-340/1-80-008.
- 6. Use of adaptations to test methods

Use of an adaptation to any of the analytical methods specified in conditions 3 through 4 of this attachment 1 shall be approved in writing by the Department on a case-by-case basis. The permittee shall submit sufficient documentation for the Department to find that the analytical methods specified in conditions 3 through 4 of this attachment 1 will yield inaccurate results and that the proposed adaptation is appropriate.

## ATTACHMENT 2

**TABLE-1. Paint Factors for Fixed Roof Tanks**

TANK COLOR		PAINT FACTOR ( $F_p$ ) Paint Condition	
Roof	Shell	Good	Poor
White	White	1.00	1.15
Aluminum (specular)	White	1.04	1.18
White	Aluminum (specular)	1.16	1.24
Aluminum (specular)	Aluminum (specular)	1.20	1.29
White	Aluminum (diffuse)	1.30	1.38
Aluminum (diffuse)	Aluminum (diffuse)	1.39	1.46
White	Gray	1.30	1.38
Light gray	Light gray	1.33	1.44 <sup>a</sup>
Medium gray	Medium gray	1.40	1.58 <sup>a</sup>

<sup>a</sup> Estimated from the ratios of the seven preceding paint factors.

**TABLE-2. Average Annual Storage Temperature  
as a Function of Tank Paint Color**

Tank color	Average Annual Storage Temperature, $T_s$
White	$T_A + 0^a$
Aluminum	$T_A + 2.5$
Gray	$T_A + 3.5$
Black	$T_A + 5.0$

<sup>a</sup>  $T_A$  is the average annual ambient temperature in °F.

NOTE: True vapor pressure for organic liquids are determined at the stored liquid temperature,  $T_s$ , which may be calculated by knowing the color of the tank and the average ambient temperature,  $T_A$ .

**TABLE-3. Typical Number of Columns ( $N_c$ ) as a Function of Tank Diameter (D, in feet) for Internal Floating Roof Tanks with Column-Supported Fixed Roofs<sup>a</sup>**

Tank Diameter Range, D (feet)	Typical Number of Columns, $N_c$	Tank Diameter Range, D (feet)	Typical Number of Columns, $N_c$	Tank Diameter Range, D (feet)	Typical Number of Columns, $N_c$
0 - 85	1	150 - 170	16	270 - 275	43
85 - 100	6	170 - 190	19	275 - 290	49
100 - 120	7	190 - 220	22	290 - 330	61
120 - 135	8	220 - 235	31	330 - 360	71
135 - 150	9	235 - 270	37	360 - 400	81

<sup>a</sup> This table was derived from a survey of users and manufacturers. The actual number of columns in a particular tank may vary greatly with age, fixed roof style, loading specifications, and manufacturing prerogative. Data in this table should not supersede information on actual tanks.

**TABLE-4. Rim Seal Loss Factors <sup>a</sup>**

Tank Construction and Rim Seal System	Average Fitting Seals		Tight Fitting Seals <sup>b</sup>	
	K <sub>s</sub> (lb-mol/ [mph] <sup>n</sup> ft yr)	n	K <sub>s</sub> (lb-mol/ [mph] <sup>n</sup> ft yr)	n
<u>Welded external floating Rim Seal System:</u>				
1. Mechanical shoe seal				
a. Primary only	1.2 <sup>c</sup>	1.5 <sup>c</sup>	0.8	1.6
b. Shoe-mounted secondary	0.8	1.2	0.8	1.1
c. Rim-mounted secondary	0.2	1.0	0.2	0.9
2. Liquid-mounted resilient filled seal				
a. Primary only	1.1	1.0	0.5	1.1
b. Weather shield	0.8	0.9	0.5	1.0
c. Rim-mounted secondary	0.7	0.4	0.5	0.5
3. Vapor-mounted resilient filled seal				
a. Primary only	1.2	2.3	1.0	1.7
b. Weather shield	0.9	2.2	1.1	1.6
c. Rim-mounted secondary	0.2	2.6	0.4	1.5
<u>Riveted external floating roof tanks:</u>				
1. Mechanical shoe seal				
a. Primary only	1.3	1.5	<sup>d</sup>	-
b. Shoe-mounted secondary	1.4	1.2	<sup>d</sup>	-
c. Rim-mounted secondary	0.2	1.6	<sup>d</sup>	-
<u>Internal floating roof tanks<sup>e</sup>:</u>				
1. Liquid-mounted resilient seal				
a. Primary seal only	3.0	0	2.6	0
b. With rim-mounted secondary seal	1.6	0	1.2	0
2. Vapor-mounted resilient seal				
a. Primary seal only	6.7 <sup>f</sup>	0	5.6	0
b. With rim-mounted secondary seal	2.5	0	2.3	0

<sup>a</sup> The rim seal factors (K<sub>s</sub>, n) may be used for wind speeds from 2 to 15 mph.

<sup>b</sup> No gaps more than 1/8 inch wide between the rim seal and the tank shell. Tight-fitting seal condition is unusual and difficult to verify.

<sup>c</sup> If no specific information is available, a welded tank with an average-fitting mechanical shoe primary seal only can be assumed to represent the most common or typical tank construction and rim seal system in use.

<sup>d</sup> No evaporative loss information is available for riveted tanks with consistently tight-fitting rim seal.

<sup>e</sup> Based on emissions from tank seal systems in reasonable good working condition, no visible holes, tears, or unusually large gaps between the seals and the tank wall.

<sup>f</sup> If no specific information is available, a vapor-mounted primary seal only can be assumed to represent the most common or typical seal system in use.

**TABLE-5. Average Clingage factors (bbbl/1000 ft<sup>2</sup>)**

Liquid	Light Rust <sup>a</sup>	Shell Condition	
		Dense Rust	Gunitite Lined
Gasoline	0.0015	0.0075	0.15
Single-component stocks	0.0015	0.0075	0.15
Crude oil	0.0060	0.030	0.60

<sup>a</sup> If no specific information is available, these values can be assumed to represent the most common condition of tanks currently in use.

**TABLE-6. External Roof Fitting Loss Factors and Typical Number of Roof fittings<sup>a</sup>**

Roof Fitting Type and Construction Details	Roof Fitting Loss Factors			Typical Number of Fittings, $N_f^b$
	$K_{fa}$ lb-mol/yr	$K_{fb}$ lb-mol/yr	m --	
1. Access hatch (24-inch diameter well)				1
a. Bolted cover, gasketed	0.0	0.0	0.0 <sup>b</sup>	
b. Unbolted cover, ungasketed	2.7	7.1	1.0	
c. Unbolted cover, gasketed	2.9	0.41	1.0	
2. Guide-pole well (8-inch diameter unslotted pole, 21-inch diameter well)				1
a. Ungasketed sliding cover	0	67	0.98 <sup>b</sup>	
b. Gasketed sliding cover	0	3.0	1.4	
3. Guide-pole/sample well (8-inch-diameter unslotted pole, 21-inch-diameter well)				c
a. Ungasketed sliding cover, without float	0	310	1.2	
b. Ungasketed sliding cover, with float	0	29	2.0	
c. Gasketed sliding cover, without float	0	260	1.2	
d. Gasketed sliding cover, with float	0	8.5	2.4	
4. Gauge float well (20-inch-diameter well)				1
a. Unbolted cover, ungasketed	2.3	5.9	1.0 <sup>b</sup>	
b. Unbolted cover, gasketed	2.4	0.34	1.0	
c. Bolted cover, gasketed	0	0	0	
5. Gauge hatch/sample well (8-inch-diameter well)				1
a. Weighted mechanical actuation, gasketed	0.95	0.14	1.0 <sup>b</sup>	
b. Weighted mechanical actuation, ungasketed	0.91	2.4	1.0	
6. Vacuum breaker (10-inch-diameter well)				see Table-7
a. Weighted mechanical actuation, gasketed	1.2	0.17	1.0 <sup>b</sup>	
b. Weighted mechanical actuation, ungasketed	1.1	3.0	1.0	
7. Roof drain (3 inch diameter)				see Table-7
a. Open	0	7.0	1.4 <sup>c</sup>	
b. Closed, 90%	0.51	0.81	1.0 <sup>c</sup>	
8. Roof leg (3-inch-diameter leg)				see Table-8
a. Adjustable, pontoon area	1.5	0.20	1.0 <sup>b</sup>	
b. Adjustable, center area	0.25	0.067	1.0 <sup>b</sup>	
c. Adjustable, double-deck roofs	0.25	0.067	1.0	
d. fixed	0	0	0	
9. Roof leg (2.5-inch-diameter)				
a. Adjustable, pontoon area	1.7	0	0	
b. Adjustable, center area	0.41	0	0	
c. Adjustable, double-deck roofs	0.41	0	0	
d. fixed	0	0	0	
10. Rim vent (6-inch diameter)				1.0 <sup>d</sup>
a. Weighted mechanical actuation, gasketed	0.71	0.10	1.0 <sup>b</sup>	
b. Weighted mechanical actuation, ungasketed	0.68	1.8	1.0	

<sup>a</sup> The roof fitting loss factors ( $K_{fa}$ ,  $K_{fb}$ , m) may be used only for wind speeds from 2 to 15 mph.

<sup>b</sup> If no specific information is available, this value can be assumed to represent the most common or typical roof fittings currently in use.

<sup>c</sup> Guide-pole/sample well is an optional fitting not typically used.

<sup>d</sup> Rim vents are used only with mechanical shoe primary seals.

<sup>e</sup> Roof drains that drain excess rainwater into the product are not used on pontoon floating roofs. They are, however, used on double-deck floating roofs and are typically left "open".

**TABLE-7. Typical Number of External Floating Roof Vacuum Breakers and Drains<sup>a</sup>**

Tank Diameter, feet <sup>b</sup>	Vacuum Breakers		
	Pontoon Roof	Double-deck Roof	Double-deck Roof <sup>c</sup>
50	1	1	1
100	1	1	1
150	2	2	2
200	3	2	3
250	4	3	5
300	5	3	7
350	6	4	--
400	7	4	--

<sup>a</sup> This table was derived from a survey of users and manufacturers. The actual number of vacuum breakers may vary greatly depending on throughput and manufacturing prerogatives. The actual number of roof drains may also vary greatly depending on the design rainfall and manufacturing prerogatives. For tanks over 300 feet in diameter, actual tank data or the manufacturer's recommendations may be needed for the number of roof drains. This table should not supersede information based on actual tank data.

<sup>b</sup> If the actual diameter is between the diameters listed in this table, use the closest diameter listed. If midway, use the next larger diameter.

<sup>c</sup> Roof drains than drain excess rainwater into the product are not used on pontoon floating roofs. They are, however, used on double-deck floating roofs and typically left "open".

**TABLE-8. Typical Number of External Floating Roof Legs<sup>a</sup>**

Tank Diameter, feet <sup>b</sup>	Pontoon Roof		Double- Deck Roof	Tank Diameter, feet <sup>b</sup>	Pontoon Roof		Double- Deck Roof
	Pontoon Legs	Center Legs			Pontoon Legs	Center Legs	
30	4	2	6	210	31	77	98
40	4	4	7	220	32	83	107
50	6	6	8	230	33	92	115
				240	34	101	127
60	9	7	10	250	35	109	138
70	13	9	13	260	36	118	149
80	15	10	16	270	36	128	162
90	16	12	20	280	37	138	173
100	17	16	25	290	38	148	186
				300	38	156	200
110	18	20	29				
120	19	24	34	310	39	168	213
130	20	28	40	320	39	179	226
140	21	33	46	330	40	190	240
150	23	38	52	340	41	202	255
				350	42	213	270
160	26	42	58	360	44	226	285
170	27	49	66	370	45	238	300
180	28	56	74	380	46	252	315
190	29	62	82	390	47	266	330
200	30	69	90	400	48	281	345

<sup>a</sup> This table was derived from a survey of users and manufacturers. The actual number of roof legs may vary greatly depending on age, floating roof style, loading specifications, and manufacturing prerogatives. This table should not supersede information based on actual tank data.

<sup>b</sup> If the actual diameter is between the diameters listed in this table, use the closest diameter listed. If midway, use the next larger diameter.



**TABLE-9. Summary of Internal Floating Deck Fitting Loss Factors and Typical Number of Fittings<sup>a</sup>**

Deck Fitting Type	Deck Fitting Loss Factor $K_F$ (lb-mole/yr)	Typical No. of Fittings $N_F$
Access hatch (24-inch diameter)		1
Bolted cover, gasketed	1.6	
Unbolted cover, ungasketed	11	
Unbolted cover, gasketed	25 <sup>b</sup>	
Gauge float well(24-inch-diameter)		1
Bolted cover, gasketed	5.1	
Unbolted cover, gasketed	15	
Unbolted cover, ungasketed	28 <sup>b</sup>	
Column well <sup>c</sup> (24-inch diameter)		(see Table-5)
Built-up column-sliding cover, gasketed	33	
Built-up column-sliding cover, ungasketed	47 <sup>b</sup>	
Pipe column-flexible fabric sleeve seal	10	
Pipe column-sliding cover, gasketed	19	
Pipe column-sliding cover, ungasketed	32.1	
Ladder well <sup>c</sup> (36-inch diameter)		1
Sliding cover, gasketed	56	
Sliding cover, ungasketed	76 <sup>b</sup>	
Deck leg or hanger well		$\{5 + D/10 + (D^2/600)\}^2$
Adjustable	7.9 <sup>b</sup>	
Fixed	0	
Sample pipe or well (24-inch diameter)		1
Slotted pipe-sliding cover, gasketed	44	
Slotted pipe-sliding cover, ungasketed	57	
Sample well-slit fabric seal, 10% open area	12 <sup>b</sup>	
Stub drain (1-inch diameter) <sup>d</sup>	1.2	$(D^2/125)^d$
Vacuum breaker (10-inch diameter)		1
Weighted mechanical actuation, gasketed	0.7 <sup>b</sup>	
Weighted mechanical actuation, ungasketed	0.9	

<sup>a</sup> For wind speeds ranging from 2 to 15 mph.

<sup>b</sup> If no specific information is available, this value can be assumed to represent the most common/typical deck.

<sup>c</sup> Not used in welded contact internal floating decks.

<sup>d</sup> D = tank diameter, feet.

**TABLE-10. Deck Seam Length Factors for Typical Deck Constructions for Internal Floating Roof Tanks<sup>a</sup>**

Deck Construction	Typical Deck Seam Length Factors, $S_D$ (ft/ft <sup>2</sup> )
Continuous-sheet construction <sup>b</sup>	
5-foot-wide sheets	0.20 <sup>c</sup>
6-foot-wide sheets	0.17
7-foot-wide sheets	0.14
Panel construction <sup>d</sup>	
5 by 7.5-foot rectangular	0.33
5 by 12-foot rectangular	0.28

<sup>a</sup> Deck seam loss applies to bolted decks only

<sup>b</sup>  $S_D = 1/W$ , where  $W$  = sheet width (feet).

<sup>c</sup> If no specific information is available, these factors can be assumed to represent the most common bolted decks currently in use.

<sup>d</sup>  $S_D = (L + W)/LW$ , where  $W$  = panel width (feet) and  $L$  = panel length (feet).

**TABLE-11. Saturation Factors for Calculating Petroleum Liquid Loading Losses**

Carrier	Mode of Operation	Saturation Factor
Tank trucks and rail cars	Submerged loading:	
	Clean cargo tank	0.50
	Dedicated normal service	0.60
	Dedicated vapor balance service	1.00
	Splash loading:	
	Clean cargo tank	1.45
	Dedicated normal service	1.45
Marine vessels	Submerged loading:	
	Ships	0.2
	Barges	0.5

**REFERENCES:**

1. Compilation of Air Pollutant Emissions Factors, AP42, 4th ed., U.S. Environmental Protection Agency, AOQPS, RTP, 9/85.
2. Evaporation Loss from External Floating Roof Tanks, Bulletin 2517, 3rd ed., API, 2/89.
3. Evaporation Loss from Internal Floating Roof Tanks, Bulletin 2519, 3rd ed., API, 6/83.